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News of the Industry Begins Page 734

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Volume 61
Number 20

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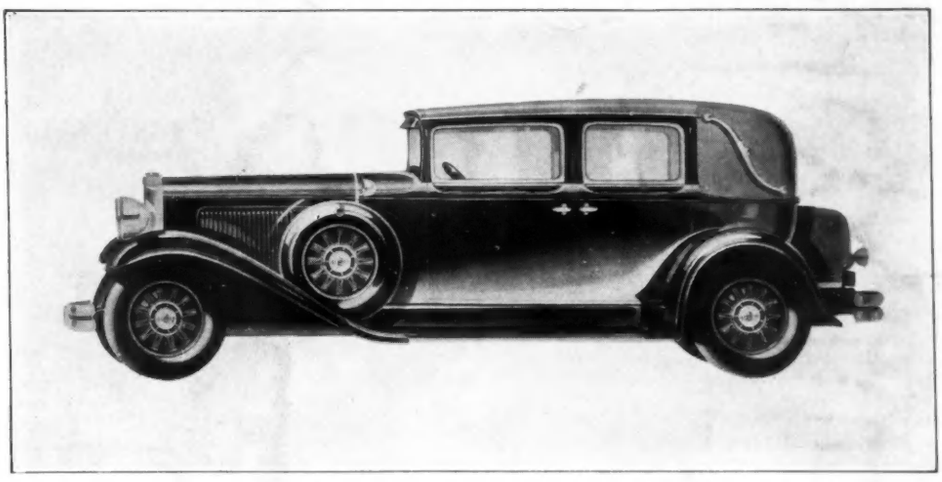
The New NASH

TWIN-IGNITION EIGHT



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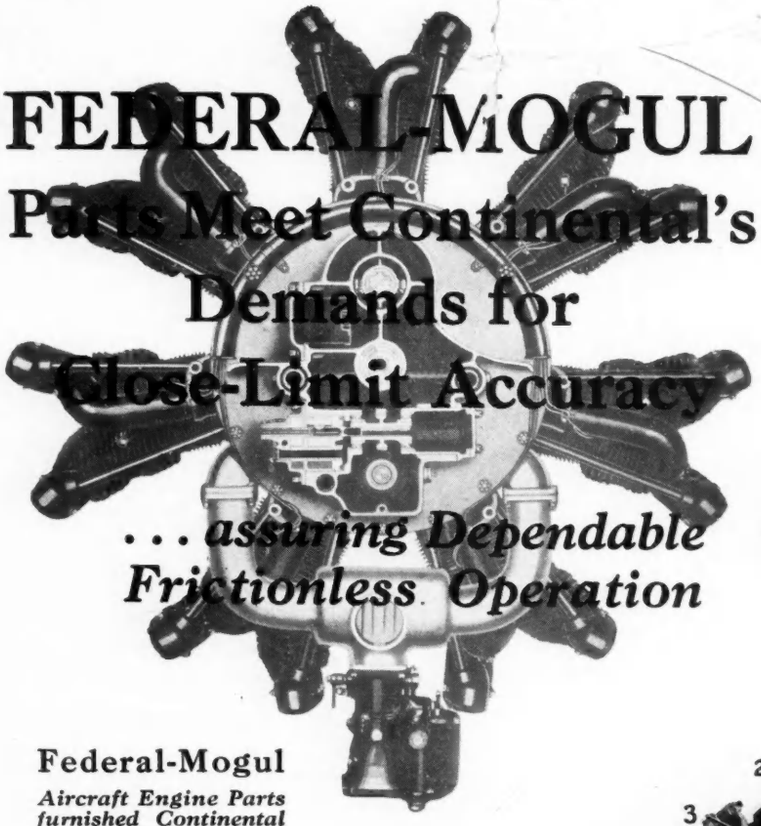

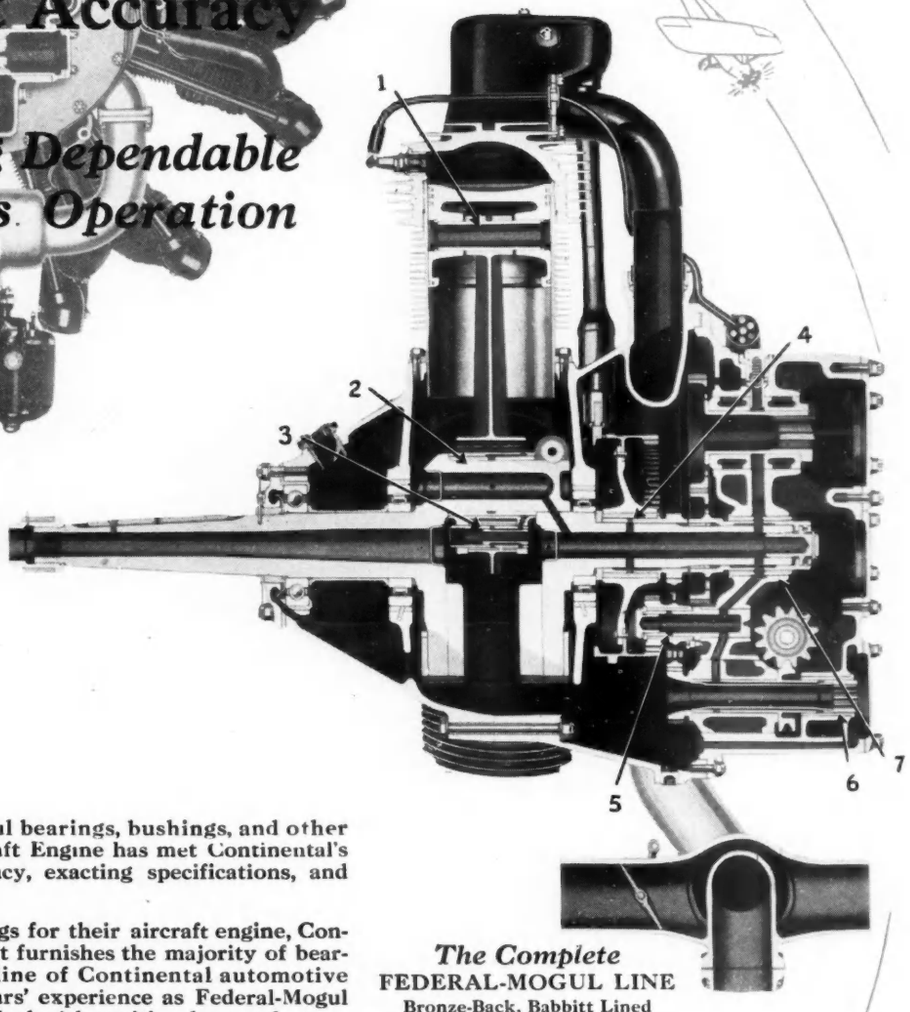

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The AUTOMOBILE

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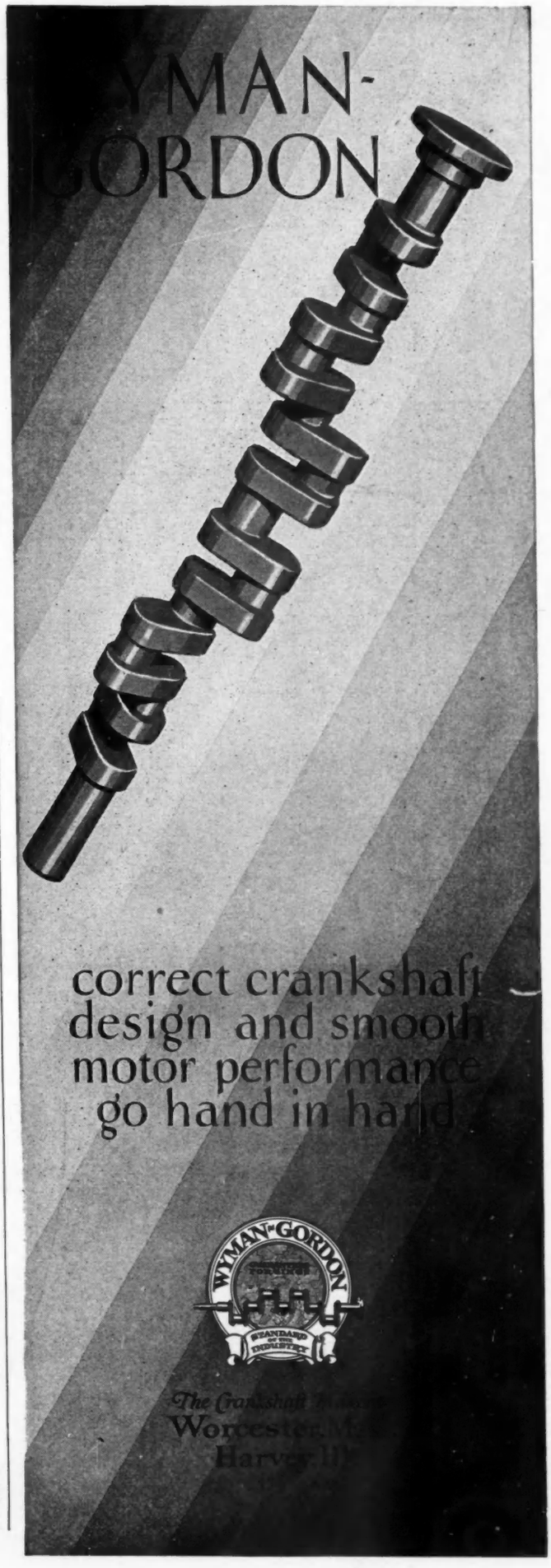

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AUTOMOTIVE INDUSTRIES
VOLUME 61 *Philadelphia, Saturday, November 16, 1929* NUMBER 20

Super-Service as Dealer Aid Advocated in Present Slump

Specialization in that field has been proved a profitable means of promoting car sales. Less automobile production in 1930 is probable, says Alfred Reeves.

By EARL O. EWAN

SUPER-SERVICE as a practical aid to automobile dealers should be a timely consideration for them as well as the manufacturers now that a rather decided recession in business activity appears to be under way.

"Super-service" is the popular misnomer for the quick performance of those minor routine services which every automobile requires regularly. They include such functions as the sale of gasoline and oil, car greasing, washing, brake service, headlight adjusting, wheel alignment, tire repairing, battery service, and the like.

Specialization in this group of services has been proved profitable from the Pacific Coast, where it first was cultivated intensively because of its remunerative nature, to the Atlantic Coast, where it has been a recognized development for less than two years.

Dealers should be interested in any discussion of the subject now because they are in the seasonally slack period of the automobile industry, which has been emphasized by business reactions following the stock market collapses of Oct. 24 and 29 and Nov. 6.

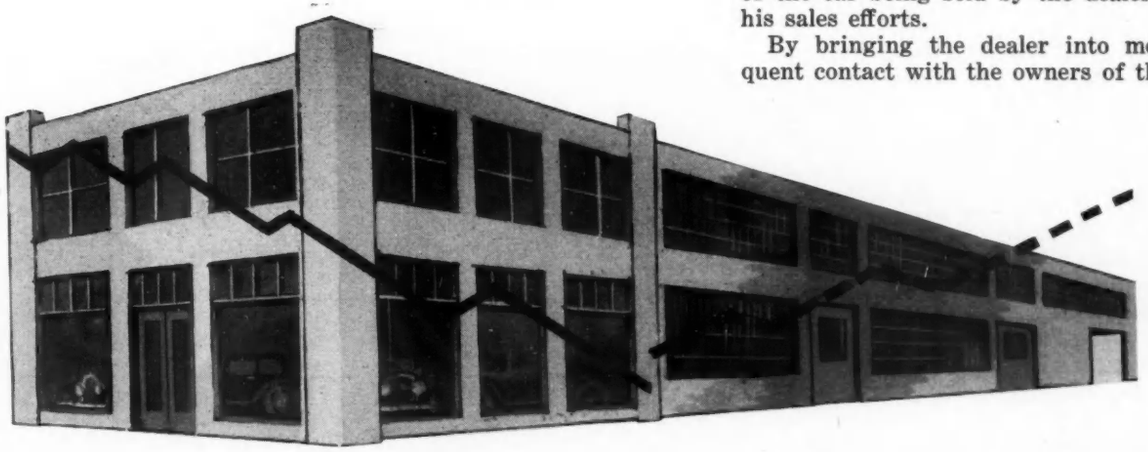
Manufacturers should be concerned, since it is largely upon the successful weathering of the present inclemency by their dealers that the continued prosperity of the automobile makers depends.

Advocates of dealer participation in the super-service field urge that the profits derived from it might well mean in many instances the difference between solvency and bankruptcy. They assert that this activity would assist rather than hamper the dealer in his primary undertaking, which is the selling of automobiles made by the manufacturer he represents.

It would help, say the sponsors of the idea, by bringing daily into the dealer's establishment the owners of competitive makes of cars.

By thus exposing them regularly to the eye appeal of the car being sold by the dealer and to his sales efforts.

By bringing the dealer into more frequent contact with the owners of the make



As sales decline in the front, dealers may let the super-service shop in the rear help carry their overhead

of automobile he is selling, thus giving added opportunities to alleviate any dissatisfaction.

By helping the dealer to keep his shop busy and his service profits up.

By assisting him in increasing his volume of parts sales.

By keeping business that otherwise would go to independent concerns.

To give the services asked at the speed required in super-service stations, the dealer must be equipped and organized to maintain an efficiency standard in such work above that found in the ordinary dealer's shop where the services are performed in a slow and toilsome manner.

In addition, the dealer must make it clearly known to every passing motorist that he performs these services by the latest methods, and he must make it easy for the car owner to drive in to have the work done.

Encouragement propounded to the dealer in the form of a super-service plan or in any other way by the manufacturer at this time would be effort exerted toward the promotion of better business in the industry. It might well strengthen dealer morale in this month and December when the utmost in energy should be expended for the clearing away of new and used car stocks. Salvation or salvage of his dealers in these months may determine for each manufacturer his prospects for 1930.

ENCOURAGEMENT propounded to the dealer in the form of a super-service plan, or in any other way, by the manufacturer at this time would be an effort exerted toward the promotion of better business in the industry . . . . Salvation or salvage of his dealers in these months may determine for each manufacturer his prospects for 1930 . . . . The exceptionally heavy stocks of new cars now on the dealers' floors to a certain extent should be considered normal because of the increase in the number of models and color styles that have been created this year by the manufacturers.

The onus of the business depression is upon the dealer insofar as the automobile industry is concerned. It has been accentuated by the overproduction which preceded the market crashes. Therefore, the manufacturer may retain unity and preserve loyalty in his highly important retail organization by giving dealer assistance with the spirit of one who is partly responsible for the situation that has been precipitated.

It is not intended to convey the impression that the dealer has succumbed. One especially striking example that he has not was cited in New York last week by Alfred Reeves, general manager of the National Automobile Chamber of Commerce, in addressing the Economic Associates, an organization of Wall Street economists and financiers, on "The Automobile Outlook." He named a New York dealer handling a make of car in the higher-price class who had sold 21 automobiles on Nov. 6 while the stock market was dropping to discouraging levels, and 24 vehicles on the following day.

Mr. Reeves told his audience frankly that the automobile industry had overproduced in the first nine months of this year, that it suddenly had curtailed production in October, and that output would be held low this month and next while dealers are liquidating their car stocks. He placed production for the first 10 months of 1929 at 5,274,000 units, or 33 per cent more than the output for the entire year of 1928.

Overproduction in the first nine months was attributed entirely to Ford and Chevrolet by Mr. Reeves, who said that the total output of the other manufacturers for the same period had been slightly below that for the same months of 1928.

New car stocks were not heavier than last year in the first nine months, Mr. Reeves asserted. To match the 33 per cent increase in production of that period, he said, there was a 35 per cent growth of new car registrations and a 37 per cent rise in sales abroad.

The exceptionally heavy stocks of new cars now on dealers' floors to a certain extent should be considered normal, he said, because of the increase in the number of models and color styles that have been created this year by the manufacturers. American manufacturers now are proucing 725 models, Mr. Reeves said, including 19 that are being turned out by a maker in the lower-price class and those of a manufacturer in the higher-price group, totaling 51, just six less than the number of varieties of Heinz products.

As a result of the experience gained this year, Mr. Reeves predicted that in 1930 automobile production will be less, but more orderly and more regulated to dealer requirements because:

1. That is the sensible thing to do.
2. Banks probably will refuse to finance the making of cars in excess of market demands.

Furthermore, he forecast that probably there will be an increase of junking plans among manufacturers next year, and that efforts to make automobile dealers better merchants will be continued. He expressed confidence that the automobile shows, beginning with the New York exposition in January, will revive the industry.

Favorable factors seen on the automotive horizon for 1930 by Mr. Reeves included:

1. Five million Model T Fords that must be replaced.
2. A replacement market of 3,500,000 cars.
3. An export market which took 1,000,000 vehicles this year, including 17½ per cent of the passenger car production.

The automobile business in 1930 will depend somewhat on

(*Turn to page 732, please*)

Hercules OO Series Engines Developed for *Heavy Duty*

Line of smaller four-cylinder powerplants in lower hp. ranges is built in three models, embodying characteristics of OX type.

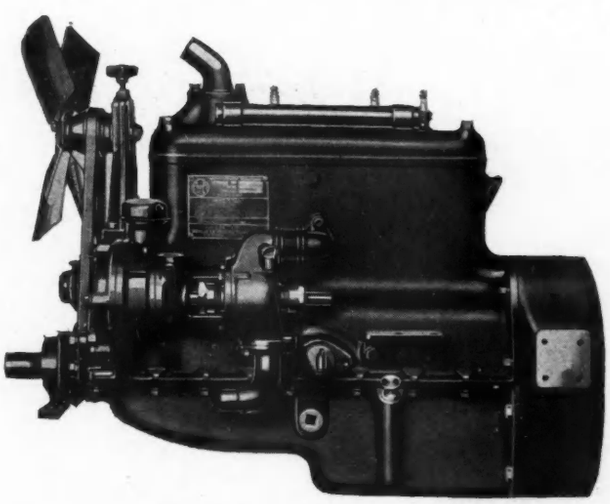
TO meet the growing demand for heavy-duty power in the lower horsepower ranges, the Hercules Motors Corp. of Canton, Ohio, has developed the OO series of four-cylinder engines. Built in three models, the OO series engines embody the characteristics of the larger OX series.

The OOA, OOB and OOC models, which comprise the series, have bores of 3½, 3¾ and 4 in. respectively, and a common stroke of 4½ in. They are identical in general design and the majority of the parts are interchangeable among the different models, the only difference being in the bore sizes and the parts affected thereby. All the models develop their maximum torque at 1000 r.p.m. and their maximum power at 2200 r.p.m.

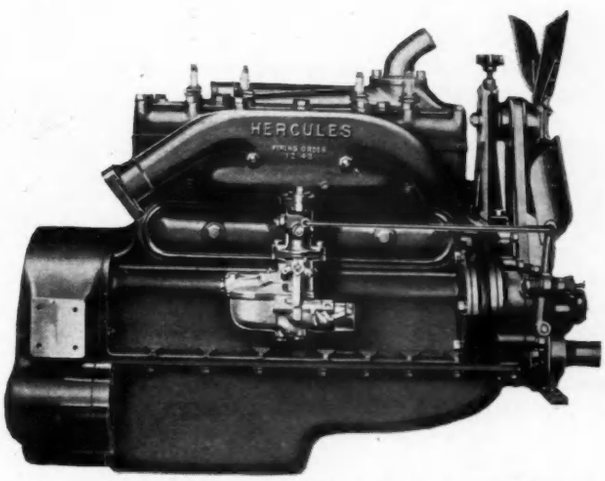
To meet present-day operating conditions calling for sustained high speed, special consideration has been given to valve cooling. The water is conducted from the water pump directly across and through the block and distributed into a passage immediately between the valves and the cylinders. The valves are thus completely surrounded by water. As a further aid to valve cooling, the valve guides are brought up very close to the valve heads.

The water pump—of the efficient, high pressure, centrifugal type—is of improved design and capable of providing ample circulation for engine cooling at all speeds. The fan is driven by a pulley located directly on the front end of the crankshaft.

Lubrication is full-force feed. The pump is located beneath the center main bearing and driven from the camshaft by helical gears. The shafts and gears of the oil pump are case-hardened, insuring long life to this unit. Oil pressure can be adjusted easily to suit operation requirements.



Hercules engine, left side



Hercules OO series heavy-duty engine, manifold side

As in all Hercules engines, the OO series have the crankcase cast integral with the block. The crankshaft is 2 in. in diameter at the three main bearings, of which the front is 2 3/16 in. long, the center 2¼ in. long, and the rear 2⅝ in. long. The connecting rod bearings are 2 in. in diameter and 1½ in. long.

The pistons are of cast iron and carry three rings above the pin. The lower of these rings is an oil regulating type. The rings are 3/16 in. wide, with a turned face that operates on the smooth surface of the honed cylinders. Piston pins are of nickel-molybdenum steel and are 1 in. in diameter. Each pin is securely locked in its connecting rod by a clamp bolt, and operates in two hard cast bronze bushings in the piston. Connecting rods are of H section and have a center-to-center length of 8 in.

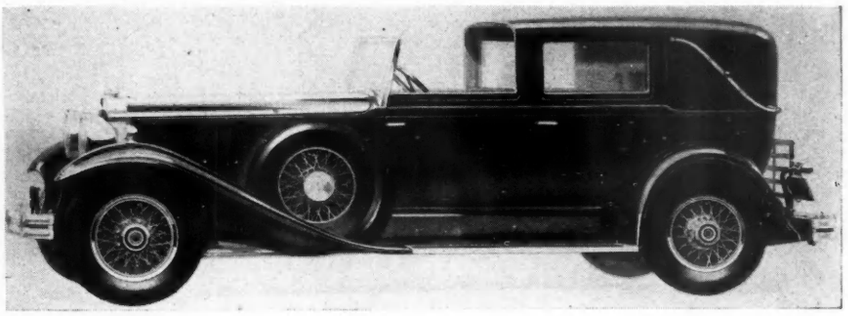
The camshaft is on the right-hand side, supported by four bearings 2 in. in diameter. The front camshaft bearing is 2 in. long and the other three are 15/16 in. long. The diameter of the shaft between the cams is 1¼ in. and the camshaft is driven by helical gears having a face width of ⅞ in.

The engines have L-head cylinders and the valves are the usual 45-deg. type. The exhaust valves have a clear diameter of 1⅜ in. and the intakes of 1½ in. They are operated by mushroom type tappets of nickel-molybdenum steel.

Convertible Bodies Prominent

Fifteen different builders display their creations on fourteen chassis makes. Cord and Ruxton front-wheel-drive cars, and Stutz supercharged speedster make their initial appearance at the show.

LOWER and better streamlined bodies, finished in darker color shades (except on sport-type bodies), higher belt lines resulting in narrow windows, slanting windshields to reduce glare, new belt molding and paneling, doors extending to the running boards and in some cases no running boards at all, increased use of leather as an upholstery material and screens to protect the radiator featured the twenty-fifth annual Automobile Salon which opened at Chicago Nov. 9.



Brewster's all-weather cabriolet on a Packard chassis exhibited at the Automobile Salon in Chicago last week

Fifteen different body builders displayed their newest creations on 14 makes of chassis, making a total of 95 exhibits. Both Cord and Ruxton front-wheel-drive cars, attracting considerable attention by their lowness, and a supercharged Stutz model made their initial appearance at an open show.

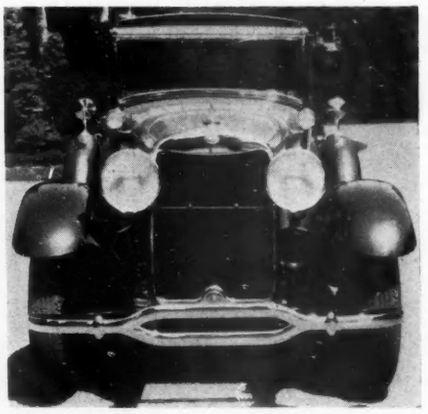
Of the many different types of bodies displayed, the convertible was the most popular, as 23 of the total had this feature, the bodies being so designed that the top folded flat into a recess or lowered section in the rear quarters.

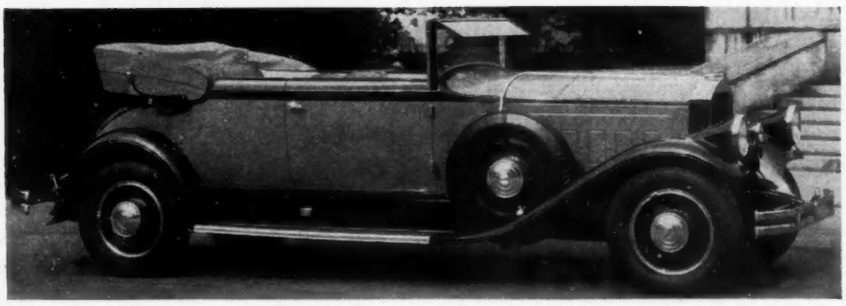
On the town cars and limousines, dark blue, black, dark green and dark maroon predominated, the lighter colors being used on the coupes and sport models. While two and three-tone effects were popular, there were many instances where the fenders and splash aprons were finished in the same color as the body. Wire wheels, finished in color and in some instances chrome-plated, with the spares mounted in fender wells, were much in evidence. The appearance of some of the disk wheels was enhanced by circular chrome-plated bands, with the remainder of the wheel matching the color scheme of the body.

Gold and silver interior hardware was used in many instances, and while cloth was by far the most popular covering for upholstery, the increase in the number of convertible models caused a corresponding increase in the use of leather upholstery. Modernistic designs on upholstery and hardware were found in the interior treatment of a number of cars.

A Dietrich body, known as the Deauville sedan on a Franklin chassis, had many interesting features. The body was finished in Highway grey (greyish green) with the splash aprons, fenders and belt line in Bay Tree (light green-grey). The high belt line extended under the windows only and the rear of the car was unrelieved. The Highway grey finish of the rear quarters was carried down to within 6 in. of the gasoline tank. The horizontal hood louvers were all the same length, but staggered, one above the other. The rear seat was divided, each section having an individual adjustment to suit the comfort of the occupant. Tapestry upholstery, with a modernistic design, was used on the cushions, the same material being used on the broadcloth-covered doors in a paneled effect.

All-weather town brougham on a Lincoln chassis by Brunn (right)

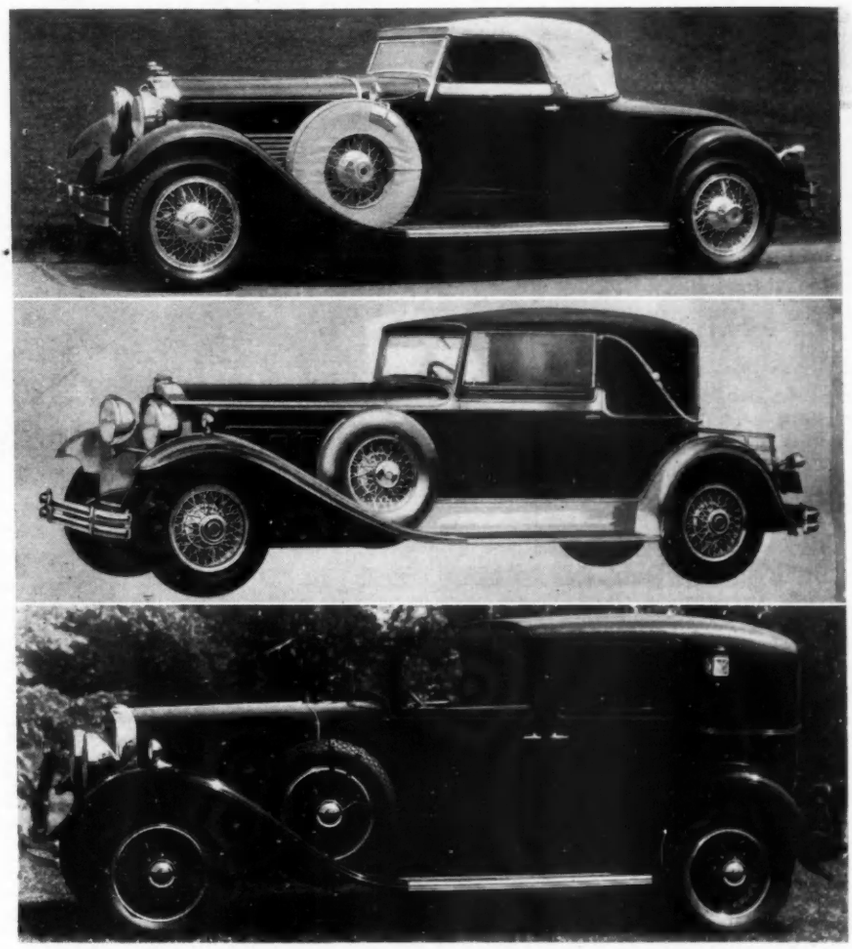




To the left is the de luxe victoria, body by Brunn, of the Pierce-Arrow custom group

at Chicago *Automobile Salon*

By W. K. Toboldt

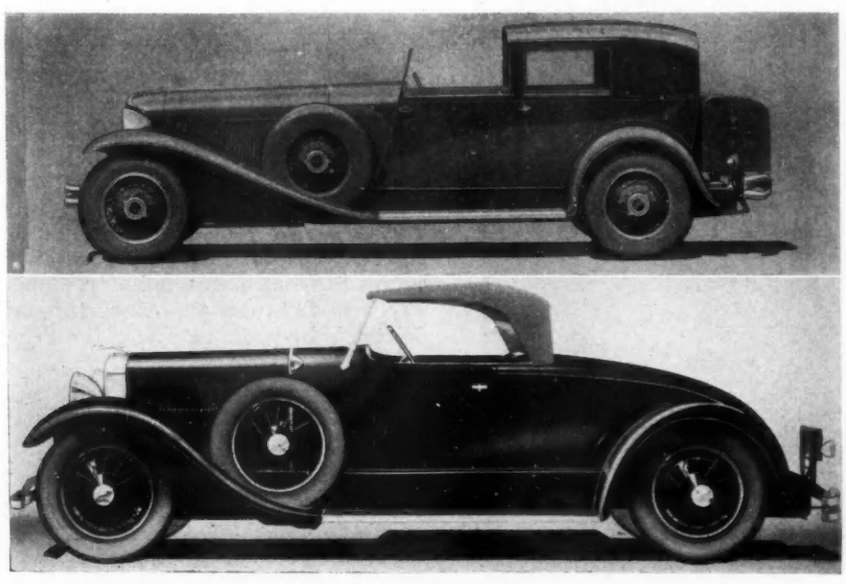


The Coupe de Ville, a town car by the same maker and also on a Franklin chassis, was equipped with carriage or coach-type side lamps, which were placed on the rear quarters, replacing the conventional landau irons. Wire wheels were used on both of these models, with the spares carried on the front fenders. Eight Dietrich bodies, mounted on Franklin, Lincoln, Packard and Pierce-Arrow chassis, were displayed.

Eleven Fleetwood custom bodies were displayed on Cadillac, LaSalle and Stutz chassis. A Cadillac with a phaeton body attracted considerable attention. This model was finished in grey with the sides of the hood in silver, which was carried back in a curve on the sides of the cowl. The wire wheels were red, the same color being used for striping. By lowering the height of the rear, space was provided for neatly storing the top when it was lowered.

Streamlining featured a Duesenberg roadster with a Murphy body. The car was finished in silver with the rear deck of highly polished metal, the dark leather upholstery contrasting with the exterior.

A recessed polished metal belt line was an innovation on a Rolls-Royce with a phaeton body by Brewster. The exterior of the car was also polished metal, and the characteristic hood lines were retained. The same exhibitor also displayed a convertible sedan with the body finished in green and the top of the hood highly polished. The disk wheels, painted to match the body, were decorated with a circular polished metal band. The door panels of another model were of



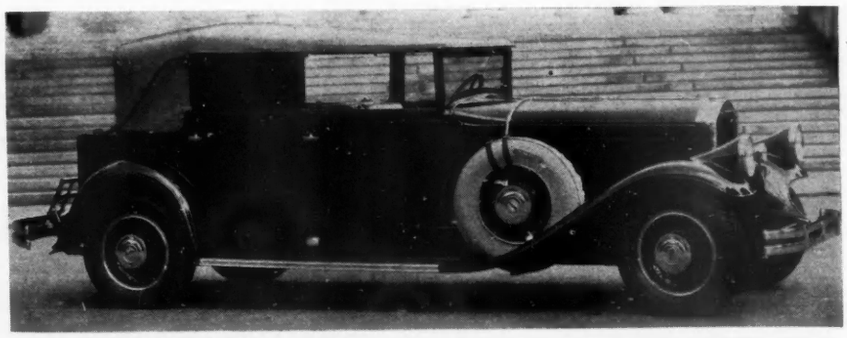
Derham showed a Stutz convertible roadster (top). Dietrich used the Packard de luxe eight chassis for a convertible victoria (center), and a Franklin chassis for the seven-passenger coupe de ville (lower)

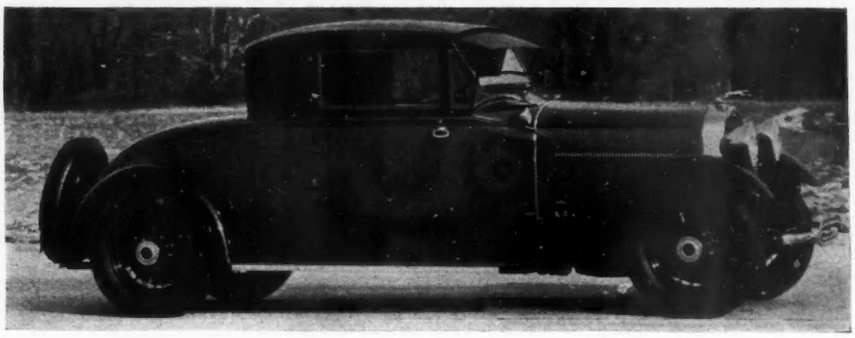
The town brougham on a Cord front-wheel-drive chassis by Le Baron (upper left) attracted considerable attention at the Chicago Salon. The sport roadster on a Lincoln chassis by Locke (lower left) was featured by a collapsible, disappearing top which had no side bow

inlaid wood, the same design being followed in the backs of the occasional seats.

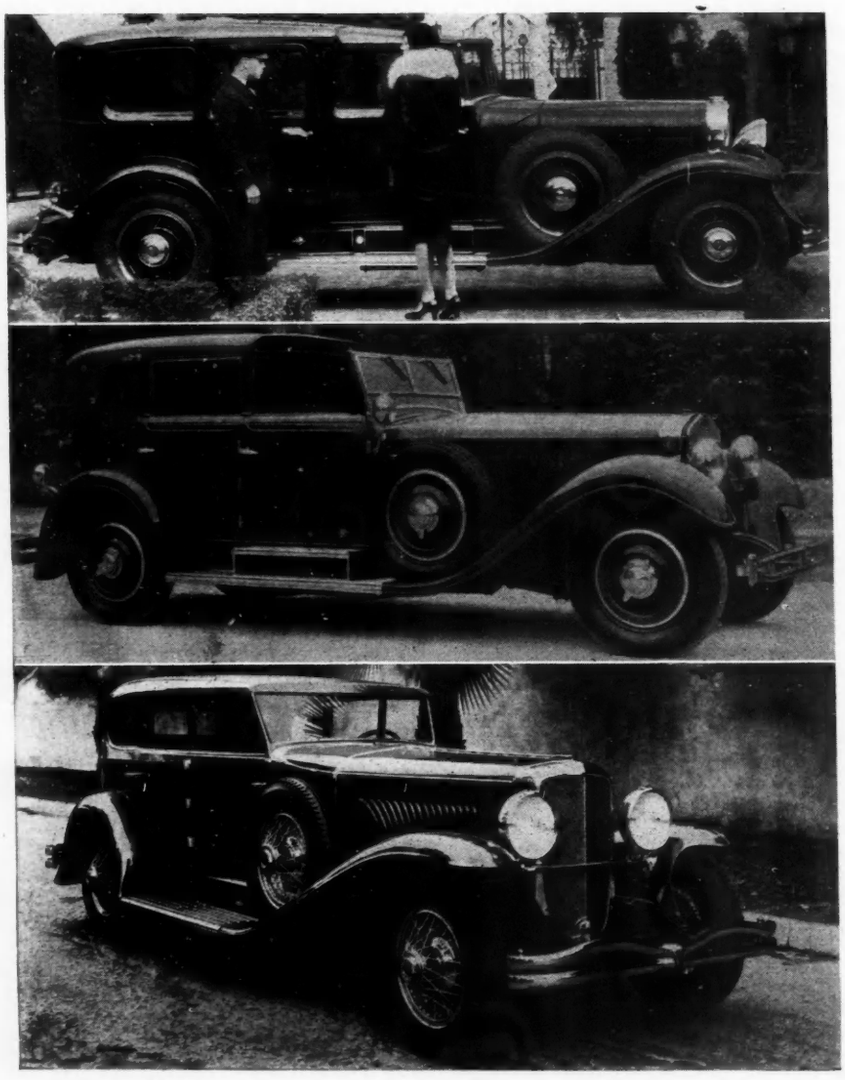
The supercharged Stutz, fitted with a four-door type sedan body by Weymann, was finished in cream color with a narrow belt in contrasting black. Cowl lights were attached to a chrome-plated cowl band, and the spare wheels were carried on the front fenders. Dark blue broadcloth made a pleasing interior. In addition to the supercharger, this car was also featured by an adjustable B-K booster control for the hydraulic brakes.

A Weymann sport coupe body on a Cord chassis attracted considerable attention. Body, hood and fenders were finished in light blue and the rear quarters and top light grey, with leather upholstery matching the exterior. Behind the front seat was a single seat at right angles to the usual position and at the same level as the floor. A table which could be folded into the side of the car was also provided. The streamlined rear quarters and deck extended over the





Dietrich convertible sedan on a Pierce-Arrow chassis (upper) and a Lincoln coupe (lower) with a body by Judkins. The treatment of the visor and windshield by Judkins is unusual

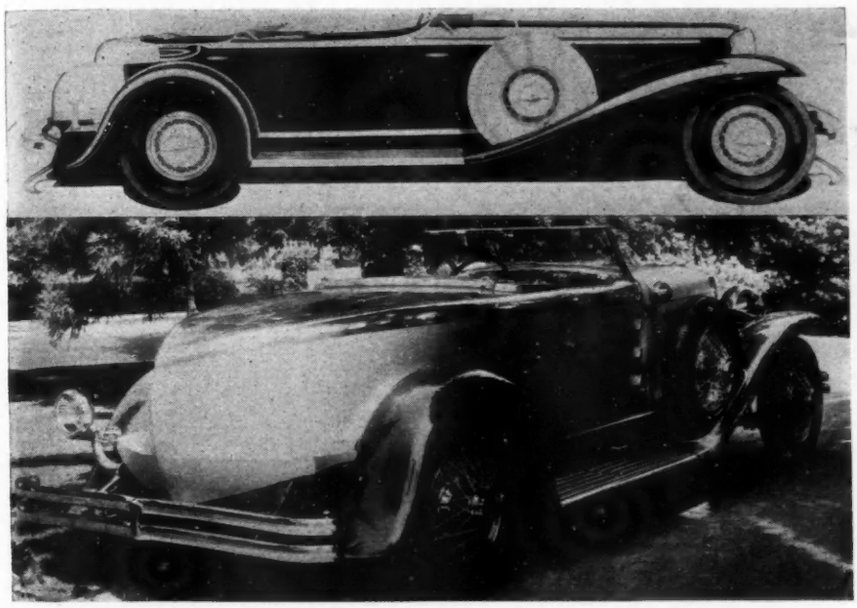


gas tank, presenting an attractive appearance. By means of an overhead cord the rear window shade could be raised or lowered from the driver's seat.

In addition to the Rolls-Royce, the foreign cars included Minerva and Isotta-Fraschini models. One of the latter's exhibits was a convertible car with a body by Castagna, finished in deep maroon with red and cream striping and black fenders. A protecting grille, nickel-plated, was placed in front of the radiator. This feature was also found on one of the Stutz models. It was possible to convert this Isotta-Fraschini model into four different models: sedan, town car, lomousine and phaeton.

A Pierce-Arrow with a Dietrich convertible sedan body presented an attractive and well-balanced appearance. Dark blue striping and fenders contrasted with the light greyish-blue body and tan cloth top. In addition to a trunk, a rack was provided for other luggage. The conventional Pierce-Arrow fender-mounted headlamps were augmented by smaller lamps in front of the radiator. This car also followed the characteristic Dietrich lines in carrying the rear

At the top (left) is the Cadillac Fleetbourne transformable brougham. The all-weather landaulet limousine (center) on an Isotta-Fraschini chassis was designed by Farina. Slanting windshield, narrow windows and high body sides featured the Duesenberg sedan by Murphy



The Cord front-drive phaeton, with a body by Murphy, finished in black Duco, with polished aluminum concave moldings (upper view), was one of the more popular exhibits at the Salon. The same builder showed a convertible torpedo roadster on a Duesenberg chassis finished in aluminum, and having a one-place rumble and a disappearing top

quarters several inches below the normal belt line.

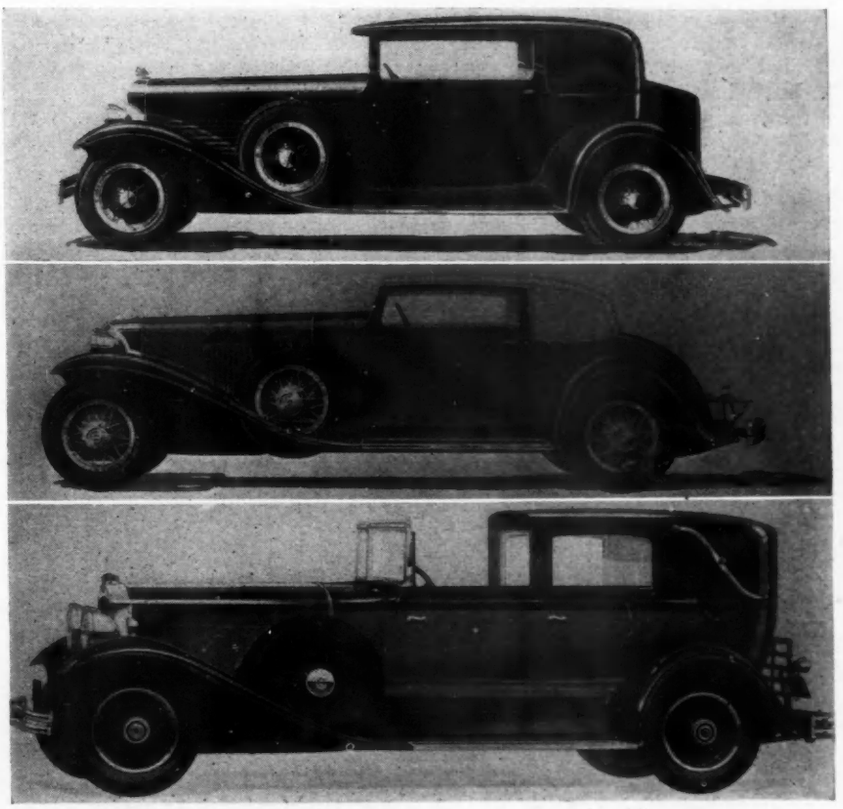
Another Fleetwood town car on a Cadillac chassis utilized a curved beading which started at the top of the radiator and curved down over the sides of the cowl. The body was finished in dark blue with light blue window reveals. Artillery wheels with the spares fender-mounted completed the ensemble.

Other body builders stressed the sports and speed tendency in their offerings of new models. Le Baron incorporated in a Lincoln roadster the added facilities of a full trimmed top, side windows and weather stripping, thus turning out a combination speedster and weatherproof collapsible coupe. Derham had a convertible phaeton body, which gives the appearance of a true sedan with the top up, yet bearing no suggestion of a closed car when the top is folded down, as it is hidden completely by an ingenious arrangement in the deck. Locke also used a compartment well in the rear deck for streamlining a roadster model.

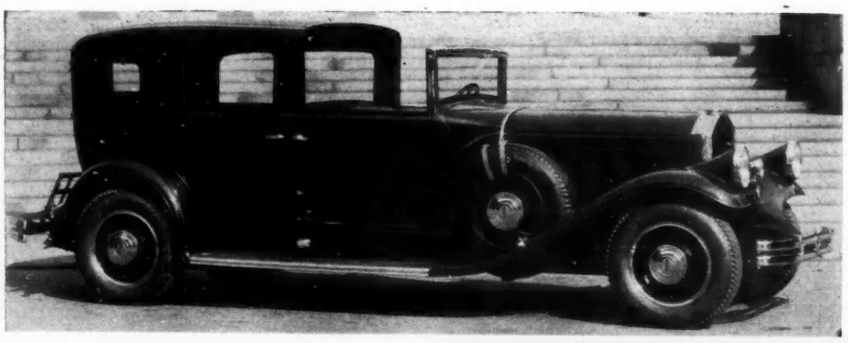
Town cars by Dietrich and Willoughby featured a clever arrangement of the roof of the driver's compartment. In the Willoughby model on a Pierce-Arrow chassis, the section of the roof is removable, but can be replaced easily without showing the division or section mark between the main roof and the driver's covering. The Dietrich model, on a Franklin chassis, has a collapsible roof over the driver's section. This roof folds into a compartment above the driver's partition, the whole being concealed by decorative metal doors. The door glass frames drop out of sight when the top is folded.

Because of the lowness of the chassis the running boards were omitted from the Ruxton models. On a Ruxton chassis fitted with a Holbrook seven-passenger limousine body the length and lowness were given greater emphasis by continuing the body panels to the bottom of the chassis side rails. The interior of this model was trimmed with Schumacher silver rayon fabric, while the front seats utilized tan leather in colors to match the interior. The rear quarter windows opened outward at the rear permitting ventilation. Urban pine manor gray and pastel colors were used to finish the exterior. The floors and seats of this body are so built that they are independent of the body, being fixed directly to the chassis. The body, which is supported at three points, therefore carries no weight but its own. This design is said to eliminate rattles and drumming and also all strains due to chassis weave. The individual members are of the box and I-girder construction with aluminum panels. This naturally results in a reduction of weight. Other body models on the Ruxton chassis were a seven-passenger town car by Baker-Raulang, a five-passenger landau sedan by Locke and a roadster by Baker-Raulang.

Running boards received considerable attention. In

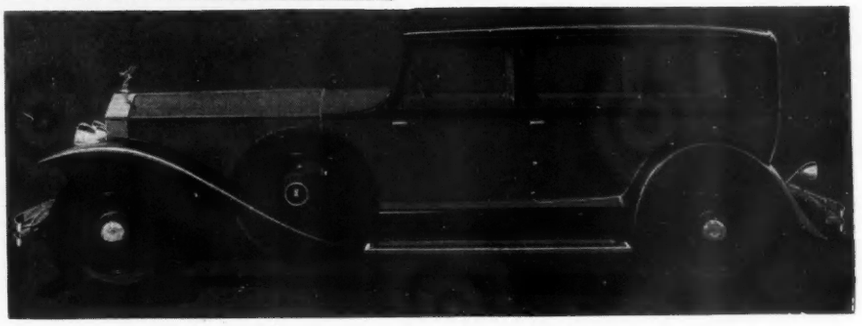


Weymann had two unusual displays in the Longchamps four-passenger coupe on a Stutz chassis (top) and the Elysee three-passenger on a Cord chassis (center). Packard all-weather town car by Le Baron (lower)



A Pierce-Arrow all-weather town car, with a body by Willoughby (left), has a detachable top over the driver's seat

The Rolls-Royce Dover five-passenger sedan (below) was shown at the Chicago Salon in black and Oxford blue, with light blue striping



many instances these were constructed of polished hard wood with deep longitudinal grooves. To prevent scratching and further improve the appearance, polished metal strips were attached. On several cars, particularly the Isotta-Fraschini and Duesenberg, these metal strips were carried up on to the fenders.

A sport sedan body by Locke on a Pierce-Arrow chassis was featured by the chrome-plated window reveals and the high belt line. The interior is of the conventional sedan type with the exception of the luggage compartment built into the back of the rear seat, this space being reached by pulling the back of the rear seat forward. The body and hood were finished in Tonawanda green while the fenders were finished in Bonaventure green, with the window reveals and wire wheels in tan.

A Lincoln convertible phaeton was attractively finished in shades of tan and brown with the interior upholstered in tan leather to match. The top of this model folded very compactly, and the rear seat was divided by an arm rest. A compartment, behind the rear cushion back, provided storage space for small articles.

In addition to cars displayed at the Drake Hotel, the Cord organization held a special showing of Cord, Duesenberg and Auburn models at the Knickerbocker Hotel.

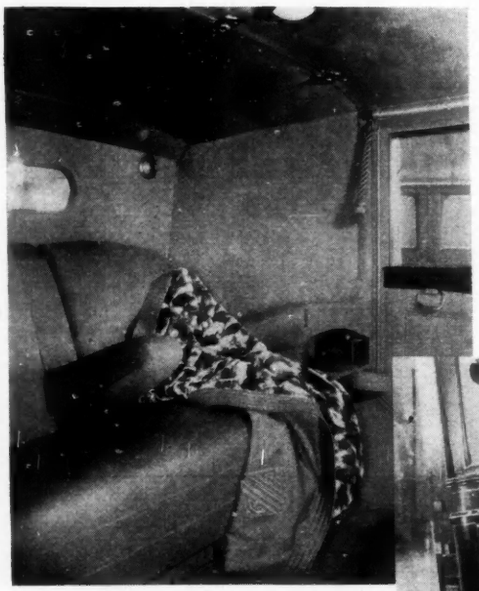
Salon Exhibitors

Chassis Makes Exhibited

Cadillac
Cord
Cunningham
Duesenberg
Franklin
Isotta-Fraschini
LaSalle
Lincoln
Minerva
Packard
Pierce-Arrow
Rolls-Royce
Ruxton
Stutz

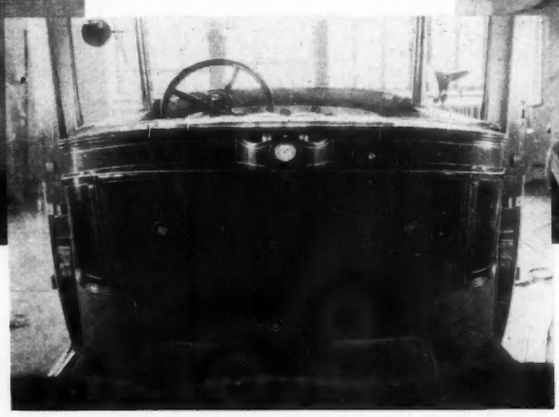
Coach Work Exhibited

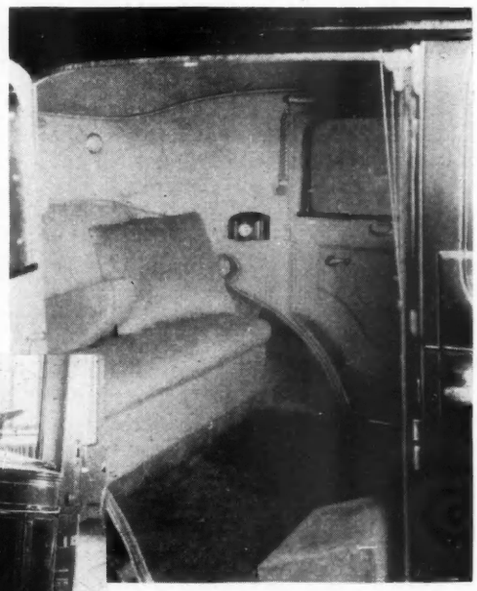
Baker-Raulang
Brewster
Brunn
Derham
Dietrich
Fisher
Fleetwood
Holbrook
Judkins
Le Baron
Locke
Murphy
Rollston
Weymann
Willoughby



Interior of Lincoln cabriolet by Brunn (above), showing removable arm rest

Paneling by Brewster used on the Rolls-Royce closed cars (below)





Interior of Dietrich coupe de ville on Franklin chassis (above)

Jeschke *Micromatic* Hone *Expands* Automatically

Throw-out attachment raises tools out of cylinder bore, eliminating manual backing off. Predetermined gage prevents oversized finishing.

COINCIDENT with the acquisition of the Jeschke Tool Corporation by the H. W. Holmes Corporation and the formation of the Micromatic Hone Corporation, the latter company announces the introduction of a production hone with an automatic expanding head.

This hone, shown in a cutaway view in Fig. 1, is provided with a cone type of expander for the stones, with a compression-spring pressure cushion and sleeve and finger expanding mechanism. It will be noted that a hardened and ground bushing *A* is mounted on the machine tool, directly above the cylinder bore. As the hone is fed down through this bushing the fingers *B* enter the latter and compress the helical spring *C* a predetermined amount. The machine tool is provided with an automatic throw-out attachment which raises the honing tools out of the cylinder bore, thus eliminating manual backing off. As the expanding fingers leave the bushing the abrasive members automatically collapse, leaving the tools in position to enter a new cylinder bore without any further manual effort on the part of the operator.

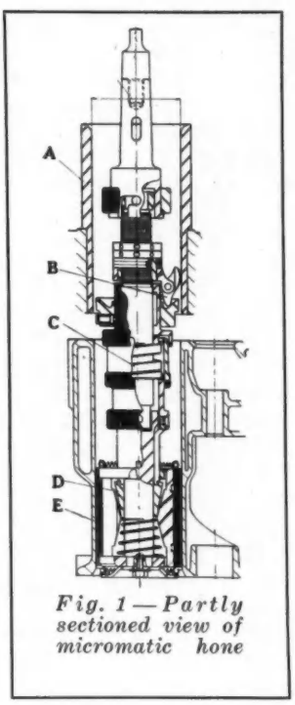


Fig. 1 — Partly sectioned view of micromatic hone

It will be noted that spring *C* is caged to limit the expansion to a predetermined size. Glazing of the stones is said to be eliminated by the constant application of pressure against the cylinder wall until the exact size is produced with the set number of rotational and reciprocating strokes.

The hone head itself is of a single cone construction, having one single supporting point for the stone holders, allowing individual compensation for uneven wear. The angle of cone *D* is beyond the angle of reversibility. Stones *E* are mounted in inexpensive light metal stampings, to decrease cost of inventory investment. Fig. 2 shows the details of construction of this hone.

In addition to the automatic production hone the company also offers the Model B hone designed for plants where comparatively small production is divided between bores of different sizes, and for service stations. It may be used for either single or multiple operation and the stones are interchangeable with the Model A automatic hone. The Model B, shown in Fig. 3, has a positive screw expansion with micrometer set and stop. The simple push button adjustment shown can be regulated to an expansion of 0.0005 in., permitting accurate work with a quick setting.

It is claimed by the maker that this hone cuts set-up time and facilitates multiple spindle operations through the action of the automatic throw-out and the automatically collapsing abrasive members. Uniformity of cylinder bores and micrometer accuracy in diameter are said to be insured by the ground bushing which controls the expansion of the honing stones. The simplicity of this attachment and the accessibility of its component elements are well illustrated in Fig. 2.

The service type hone shown in Fig. 3 is adaptable to almost the entire range of passenger car cylinder bore sizes with the single set of honing stones. This hone can be used with any 5/8-in. drill.

General offices of the Micromatic Hone Corporation are located at 5057 Woodward Ave., Detroit. Kirke W. Connors is president and general manager; Harold W. Holmes, vice-president in charge of engineering; R. M. McGuire, sales manager; Fred M. Kern, factory manager; R. E. Allport, director of purchases; George E. Eyestone, treasurer. These men, together with H. A. G. Jeschke, comprise the board of directors.

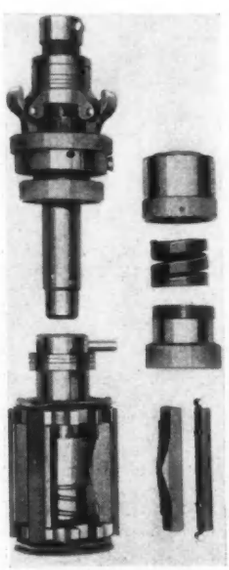


Fig. 2—Details of construction of hone

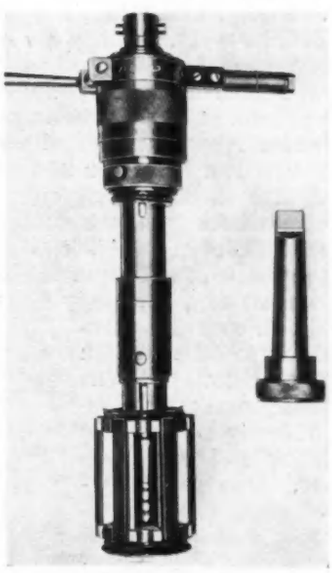


Fig. 3 — Micromatic hone for small production and service

New Trends in Design Are Seen Ended Today

Seventy British makes and included in biennial event. busy with heavy produc

By M. W.

THE truck show at Olympia, which opened on Nov. 4, indicates the developments and trends in British truck and bus design that have occurred during the past two years, for the last show of this kind in England was held in 1927. This is in accordance with an established policy of the organizers, the Society of Motor Manufacturers and Traders, to hold the show biennially. The exhibit closed Nov. 16.

The present exhibition is no less international in character than were its forerunners. It is notable for containing the largest number of new models ever produced at any Olympia truck and bus show (nearly 70 of British makes alone) and a large number and variety of additional six-wheeled chassis for freight and passenger services, and for marking the introduction of still larger high-speed trucks, the standardization of six-cylinder engines, and the forward driving position for buses and coaches, and a notable extension of the load-carrying capacity of gasoline-engined road vehicles.

Industry is Healthy

There is no question as to the healthy condition of the British truck and bus industry; with few exceptions, makers are exceptionally busy, particularly in producing bus and coach chassis and, generally speaking, the new models are introduced to comply with operators' demands rather than to create demand by the offer of improved types. Thus, Leyland in producing four new high-speed trucks with load capacities of from 4 to 12 tons, is not superseding the slow-speed heavy-duty models hitherto current, but endeavoring to meet a new and additional demand; doubtless in time, as demands become more uniform, the slower models will be discontinued by this and other firms but, as things are, manufacturers feel compelled to extend as well as vary their lines.

Some makers continue to specialize in one or two definite types, but they are exceptions. It is to be noted, however, that while makers, such as Morris and Bean, who have hitherto specialized on 1 to 1½ ton trucks are now producing sizes up to 2½ or 3 tons, the firms whose repute has rested mainly upon trucks for 3 to 6 tons and buses for 26 to 70 passengers are not producing smaller sizes, only larger ones. This is accounted for by the fact that while competition is keen throughout the field, it is keenest of all in the 1 to 2 ton classes, for it is in these that American competition is most felt, especially from Ford and Chevrolet. In sizes above 2-tonners there is little foreign competition in the home market.

Nearly all the new truck and bus chassis, four or six-wheeled, are high-speed models designed expressly for pneumatic tires. Maximum bus speeds with single-deck bodies range up to 70 m.p.h. and truck speeds with four-ton loads to 40 m.p.h. The 12-ton Leyland is capable of 30 m.p.h. for it has a ratio on high giving 25½ m.p.h. at 2000 r.p.m., the latter crankshaft speed being well within its range.

Many of the new low-level bus chassis have the engine and transmission offset and diagonal to give a straight-line drive to the worm gear casing close to the left-hand rear spring.

Worm final drive appears on nearly all passenger models and trucks above 1 ton; exceptions of note are the largest A.E.C. and Leyland trucks which have a combination new to British practice, viz., double reduction by spiral bevels and double-helical (herringbone) spur gears. Cam steering is used on all but a few new models, and a vacuum servo for the four-wheel brakes on large trucks and buses is almost standard, though Westinghouse air brakes are

Courtesy

ENGLAND'S most interesting truck exhibit shows the tendency toward high-speed vehicles with pneumatic tires, with a maximum speed up to 70 m.p.h. for the lighter models, and truck speeds with four-ton loads to 40 m.p.h. Competition is most keen in the one- and two-ton field, where Ford and Chevrolet sales are felt by British manufacturers. Practically all buses over one ton have worm final drives, cam steering and vacuum servo four-wheel brakes.

At London *Truck and Bus Show* in *Olympia Hall*

ten American models are Manufacturers reported tion schedules under way.

BOURDON used by Bristol. Leyland has two vacuum servos on the two largest four-wheeled trucks and three on the 12-ton six-wheeler. The Still wire-wound tube for radiators, recently described in *Automotive Industries*, is finding favor.

Among other trends to be noted at the show are those toward the use of oil coolers in new models; separate cylinder liners; thermostatic radiator control; percentage oil filters; aluminum alloys for crankcases, gearsets and rear axle centers, instead of ferrous metals; overhead camshafts; duplex or triplex roller chains for distribution; chain and friction disk drive for fans, and two or three grouped series of nipples for lubricating all chassis bearings. Completely centralized lubrication is used by only one maker, Singer.

"The Autocar"

Additional makers are offering models with small solid-tired wheels, low frames and forward control for city and dock service trucks, refuse collection, etc., and Karrier is a new entrant to the tractor field. Scammell, still specializing in tractors, though making a rigid six-wheeler and producing a new four-wheeled truck, has extended the scope of the tractor by making it and articulated trailers for loads up to 100 tons. The largest size has 14 wheels in four rows, viz., two steerers, four drivers on the chain-driven tractor, and two rows of four each near the rear end of the trailer; the four-row wheels are mounted in pairs on brackets pivoting on a longitudinal axis. A 65-ton model has 10 wheels and a 15-17 ton eight wheels.

A feature of note in long-distance bus and coach bodywork is the widespread adoption of the "sunshine" roof idea. These "sunsaloon" buses and coaches have sliding or folding roofs, the former in three or four sections and the latter usually capable of being wound back in less than a minute by the conductor from inside.

Inclosed Stairways

Double-deck bodies without exception now have an inclosed stairway and upper saloon. There is one example with inclosed stairways at the front as well as at the rear, with a door—for exit only—at the front of the lower saloon and the usual open entrance at the rear. Crossley and one or two other makers show a double-deck bus with central three-passenger seats in the upper saloon and two side gangways at a lower level, bringing the overall height of the vehicle down to 13 ft. The sleeper coach is under a cloud, because certain services this year did not meet with success.

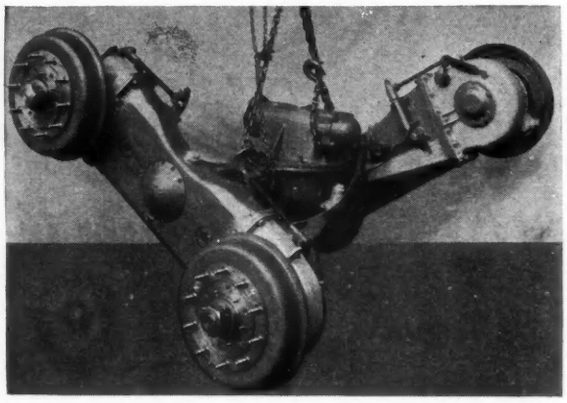
Forty-two makes of commercial vehicles are being exhibited by British manufacturers, and in addition there are to be seen 10 American makes, eight French, and one Belgian, Danish, German, Italian and Swiss makes each. It is indicative of the importance to which passenger transportation over the public roads has attained in recent years that there are more buses and parlor coaches on view than vehicles of any other class. As compared with 149 passenger-carrying vehicles there are 130 trucks, 89 bare chassis, 27 tractors and 29 miscellaneous vehicles. The American makes at the show are Brockway, Chevrolet, Essex, Fargo, Federal, G.M.C., International, Reo, Stewart and Overland. Forty-seven body builders exhibit from one to six bodies each, chiefly on British but also on some American chassis.

Heavy trucks with oil engines are being exhibited by Mercedes, Saurer and Berna. The only foreign six-wheelers shown are the Mercedes, Liberty and Berliet, the two latter having drive on one axle only. All of these are quite heavy trucks. Citroen exhibits a new 2-ton truck with six-cylinder engine of 152 cu. in. displacement and a wheelbase of 131 in. The chassis price is £265.

The Four-Wheel-Drive Wagon Co. has a new tractor with four-wheel steering

FEW original body designs were shown in the London exhibit of trucks and buses this year. Sunshine roofs are increasingly popular. Most manufacturers have shown a wide variety of models, makers of only two styles being in the minority. Coach fittings are considerably more luxurious than in the past, although prices are stable. Mechanical improvements have been the only appreciable item of increased cost, the Exhibit demonstrated.

and four-wheel drive. It is equipped with a transmission with seven forward speeds and with hydraulic brakes. A new 6-ton low-frame truck of the same make is also shown, which drives on the front wheels and brakes on the rear wheels only. The front wheels carry 36 by 8-in. pneumatics and the rear wheels 20 by 6-in. dual solids. Another product of the same firm on exhibition is a 9-ton, six-wheel-drive chassis with eight-speed transmission for cross-country service. The mean wheelbase of this truck is 151 in. Chenard-Walcker, the well-known French firm, shows a 20-ton tractor with Knight sleeve-valve engine, while Essex exhibits the Dover delivery wagon for 1600-lb. loads.



Rear axle unit of Scammell six-wheel unit, suspended to show articulation of the spur-drive casings

Very few original bodies are being shown. Morris, Austin and Overland display what are referred to as commercial sedans, while Chevrolet features an "expando" van. Apart from sunshine roofs the coaches are all of orthodox design. While equipment of coaches is more luxurious than in the past, prices are stable. Such features as six-cylinder engines, four-wheel servo brakes, and stronger axles, frames and other parts make the prices of new chassis higher.

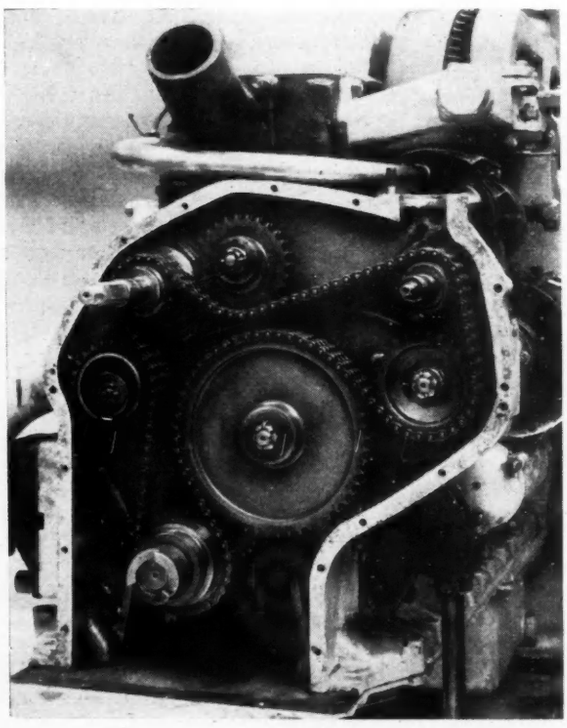
London General's New Models

The manufacturing subsidiary of the London General Omnibus Co., A.E.C., introduces three new passenger models, though one, a six-wheeler, was announced a few weeks back and an illustrated description appeared in *Automotive Industries* of Sept. 14. The other two are four-wheelers and have the same six-cylinder overhead camshaft engine as the former. They are designed for single-deck buses or saloon coaches and double-deck bus bodies respectively. They are identical in general design, though the heavier type has a shorter wheelbase, viz., 15 ft. 6½ in. as against the 17 ft. of the single-deck model; the frames differ behind the rear axle, for in the double-deck model the side rail extensions drop to within 13 in. of the ground to allow one step up to suffice to the rear platform.

The power-plants are offset in the frame and inclined both diagonally and downward to give a straight line drive to the worm set under the axle close to the underslung spring on the left. This arrangement not only permits a lower floor level but also provides more room on the right of the engine for the forward driving controls. The shifter lever, which is also alongside the engine, is coupled to the gearset by a single shaft that slides and rotates. All gears except the reverse are ground. The worm ratio is either 6¼ or 7 1/3 to 1.

A two-part propeller shaft is used with Hotchkiss drive. Marles cam steering, vacuum servo for four-wheel brake operation and Still single-row wire-wound radiator tubes are common to both models. Standard tire equipment is 36 x 8 in. at the front and twin 38 x 9 in. at the rear. Nipples for chassis lubrication are grouped in two sets on opposite sides of the frame.

A.E.C. also introduces four new truck chassis models. These are all four-wheeled, their load capacities ranging from 3½ to 8 tons. On two the driver is located in the normal position, while on the other two he is alongside the engine. The engine in all cases is of the same general design as that of the new passenger chassis, but in the two smaller models it has four cylinders of 4.41 in. bore and in the two larger six cylinders of 4.33 in. bore. The smaller models, too, differ from the larger in that they have overhead worm final drive, while the others have a double reduction gear consisting of a spiral bevel and double helical (herringbone) gears.

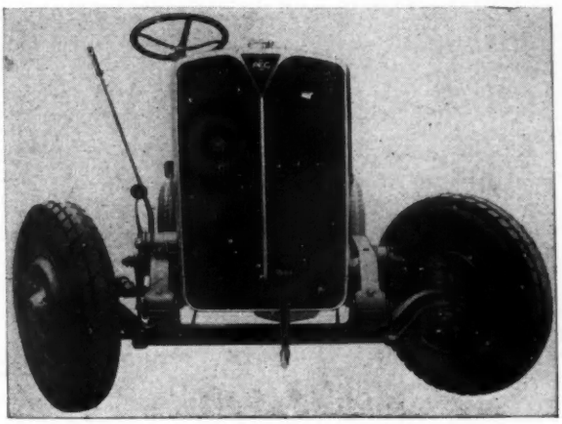


Housing removed to show the triplex roller chain distribution of the new Bristol six-cylinder engine. This was exhibited at Olympia as the power unit of a six-wheel bus chassis. The Truck Show indicated that this type of front end drive is becoming standard in British automotive practice

A new Bean chassis for 2½ to 3-ton trucks has a four-cylinder Ricardo designed engine with masked inlet valves. The bore and stroke are 95 x 130 mm. The design is orthodox throughout except for the provision of an oil cooler consisting of six of the radiator tubes grouped at the left-hand rear side. Chassis lubrication is by oil-gun nipples grouped in two sets of five at each side of the frame. The engine develops 51 b.hp. and has a maximum torque of 1700 lb.-in. at 1200 r.p.m. The worm ratio is 7.33 to 1.

Two new Bristol bus chassis have six-cylinder engines and forward driving controls. One is a six-wheel type with the two driven axles passing through "spectacled" side rails. The six-wheeler has three differentials, but differs from orthodox British practice in that the rear suspension consists of only two inverted half-elliptic springs instead of four, the centers of the two springs being above and attached to a trunnion tube midway between the two axles. The engine of this six-wheeler has pushrod operated overhead valves and a bore and stroke

of 4½ x 5½ in. It develops 80 b.hp. at 1000 r.p.m. and 110 b.hp. at 2000 r.p.m. Camshaft, fan, generator and magneto are driven by a triplex roller chain with automatic spring tensioning. An impulse starter is an unusual feature. The crankshaft is of 3 per cent nickel-steel, with seven bearings of 3 in. diameter and counterbalanced; in addition to the pressure filter in the main circuit there is a by-pass filter of the A.C. type. A single-plate clutch and a four-speed gearset form a unit with the engine.



Example of single-row Still wire-wound tubular radiator, installed here on the A.E.C.

The rear springs are secured to the axles by spherical mountings to permit of a wide range of independent movement. The pedal brake operates through all six wheels by the Westinghouse air pressure system, while the hand lever acts directly on the four rear wheels. The chassis frame is of 3 per cent nickel-steel; the side rails, having a maximum depth of 11 in., are 3 in. wide and pressed from ¼-in. stock. Optional rear axle ratios are 5.4 and 7.5 giving 40 m.p.h. and 29 m.p.h. respectively at 2000 r.p.m. with 36 x 8-in. tires. Chassis lubrication is by grouped oil-gun nipples.

Under the designation "S.M.C.," the Sunbeam Motor Co. appears at the truck show for the first time with two bus chassis, intended for 26-32-passenger single-deckers and 68-seated double-deckers respectively. The smaller model is a four-wheeler and the other a six-wheeler. These Sunbeam bus chassis, it may be recalled, were described at some length in *Automotive Industries* of Aug. 17 last.

The four-wheeled Bristol has an L-head engine with 4 by 5-in. cylinders. In this case the four-speed gearset is separately mounted, and the four-wheel brakes are operated by vacuum servo; they take effect upon 17-in. diameter drums with shoes 6 in. wide. A point of note in this chassis is that all springs are self-adjusting, by means of cam plates under the frame sides. This model has a wheelbase of 16 ft. and is intended for 32-seated parlor cars with an allowance of 1500 lb. for the body. The six-wheeler is designed for 60-seated double-deck bus bodies and has a wheelbase of 19 ft.

Commer, as the result of the merger early this year, associated with the Hillman and Humber passenger car companies, has produced four new models, two for freight and two for passengers. A 20-seated passenger chassis and a 2-ton truck chassis are very similar throughout, while the other two models also have close resemblance. The first two have a six-cylinder engine with overhead inlet valves, a bore and stroke of 3.15 by 4.57 in. and developing 68 b.hp. The camshaft is driven by a duplex roller chain with spring tensioner; ignition is by battery system and fuel feed by A.C. pump. The four-speed gearset, unit with the engine, has helical gears for the constant mesh and third speed. Spiral bevels are used for the final drive (5.8 to 1) in the full-floating rear axle, which is a steel drop-forging of the banjo type reinforced by seamless steel tubes to carry the hubs on taper roller bearings. The steering gear is of the Marles cam type; the four-wheel brakes have vacuum servo operation. Grouped oil-gun nipples are used for chassis lubrication, these attending to the spring shackles as well as the chassis bearings. The wheelbase is 13 ft. 6 in. for the passenger chassis and 12 ft. for the trucks; both types have normal driving control.

The larger Commer passenger chassis for 32-seated single-deck or 50-seated double-deck bus bodies has a six-cylinder L-head engine of 4.13 by 5.50 in.; it is of the forward-control type with a wheelbase of 16 ft. 4 in. Vacuum servo four-wheel braking, Marles cam steering, worm drive, magneto ignition and optional worm ratios of 5¾ and 6¼ to 1 are items of the specification.

Shorter Wheelbase

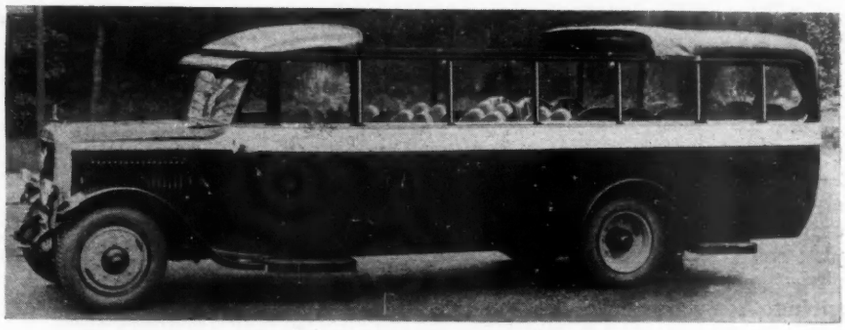
The fourth new model is a six-seven truck chassis. Its engine and general layout corresponds with that of the larger passenger chassis, but, to secure a short wheelbase with a long platform length without adopting forward control, the front axle is set back behind the engine, which is a novel feature in British practice.

Supplementing a six-cylinder parlor coach chassis, Crossley has introduced a model for a double-deck bus seating 50 passengers. The same engine is used, an L-head type with a bore and stroke of 4 by 5½ in. and developing 110 b.hp. Dry sump lubrication is used, a seven-bearing crankshaft, and two detachable heads, each covering three cylinders; the four-speed gearset is separately mounted on a sub-frame carried on rubber-lined bushings at the rear. With a wheelbase of 16 ft. 7½ in., the frame channels are 11 in. deep, 3 in. wide and of ¼-in. stock; the loaded height from the ground is 22 in. The rear springs, 60 in. long and 4 in. wide,

A.E.C. coach which has overall height of 154 in., unloaded

have Woodhead divided top leaves with forged eyes at the inner ends to take transverse locating bolts; they have supplementary leaves coming into action under excess load.

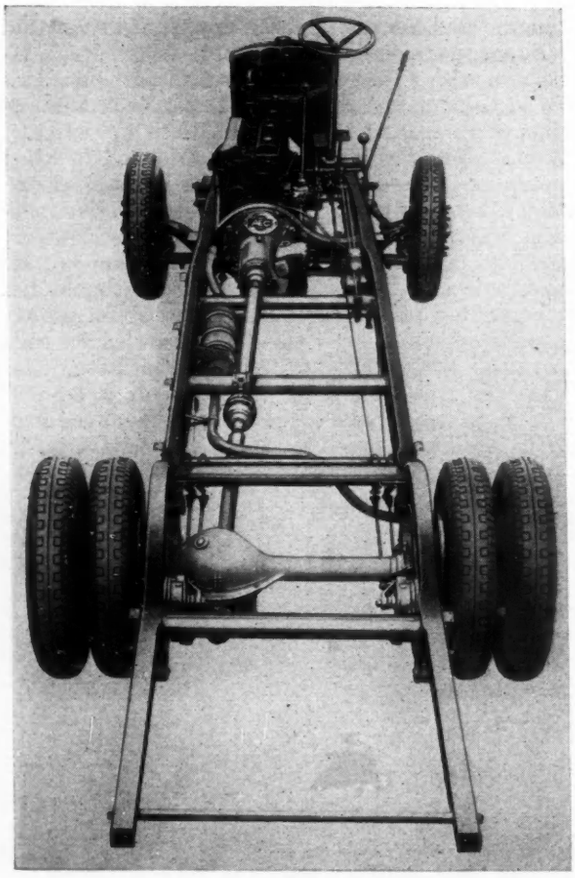
The worm casing of the rear axle, brake shafts, brake shoes, transmission casing and engine sump are among details built of aluminum alloys, and weight reduction has been aimed at also in the design of the standardized enclosed top-deck body, which is built by the chassis makers. This body seats 24 passengers below and 26 above, and the overall height is kept down to 13 ft. with the bus unladen; this is accomplished by the use of a sunken gangway in the lower compartment and two such gangways (one on each side) on the upper deck. On the lower floor all the seats are transverse in pairs except above the wheel arches, where on one side there is a three-passenger seat and on the other a single seat with space alongside it utilized as a locker, with a parcel rack above. Special seat construction is used. Each double seat on the lower deck weighs only 38 lb. complete, and the body, with an emergency door at the front and an enclosed staircase at the rear weighs almost exactly 5000 lb.



Sunshine roof, partly rolled back. Some types slide rearward to open

Daimler Introduces Double-Decker

Another prominent British maker introducing a double-deck chassis to supplement a parlor car coach model is the Daimler Co. The six-cylinder Knight-type engine with a bore and stroke of 3.81 by 5.12 in. develops 50 b.hp. at 1000 r.p.m. and approximately 100 b.hp. at its peak. It has an automatic oil primer operating until the engine warms up, battery ignition, a crankshaft vibration damper and an Auto Klean oil filter. A section of the radiator, comprising six tubes, is utilized for oil cooling with circulation by means of an auxiliary pump. The specification includes automatic ignition timing, single-plate clutch, separately mounted four-speed gearset with a casing of aluminum alloy, two-part propeller shaft with Spicer joints and a central self-aligning ball bearing, underslung worm drive of 8¼ to 1 ratio in an aluminum differential casing, vacuum-servo-operated four-wheel brakes, aluminum brake drums with cast-iron liners and shoes of aluminum, cam steering and half-elliptic springs, of which the front pair are inclined to a relatively acute angle to absorb the horizontal component of impacts from road shocks. Hydraulic shock absorbers are fitted and Silentbloc bearings in the spring shackles. Fuel feed is by Autovac with a 5-gal. reserve supply and gage. Chassis lubrication is by grouped oil-gun nipples; wheels are disk, carrying 38 by 8 in. pneumatic tires; the wheelbase is 16 ft. 3 in. and the overall length 25 ft. 6 in. The frame height, laden, is 25¼ in. with a ground clearance of 6¾ in. under the rear axle. It has forward control.



A.E.C. chassis with offset transmission for 52-seat double-deck bus

Four New Dennis Buses

One of the oldest and most successful British makers, Dennis, has four new models, two passenger chassis for 20 and 32-seaters with six-cylinder engines, one with pushrods and the other an overhead camshaft, a four-cylinder two-ton speed truck and a six-wheeled 12-ton truck chassis with a six-cylinder engine and three differentials. The engine of the latter chassis has a bore and stroke of 4¼ by 5½ in. and develops 60 b.hp. at 1000 r.p.m. and a maximum of over 100 b.hp. The cylinders are cast in a block and have a detachable head for each pair. Departing from usual practice, the camshaft and accessory drive gear is at the rear end of the aluminum crankcase. Ignition is by magneto. The four-speed gearset is separate from the engine. Single inverted half-elliptic springs 5 in. wide are used for the rear suspension. The springs are pivoted to a tubular cross-member and have their ends shackled to brackets below the axles, torque being taken by a pair of ball-jointed rods running from the axles to the tubular cross-member.

The six-cylinder engine of the 20-seated bus chassis has pushrod-operated overhead valves, fuel feed by A.C. pump, a unit cylinder block and crankcase in cast-iron, to which the aluminum flywheel housing and transmission case are bolted. A point of note in the overhead camshaft engine of the 32-seated bus is that separate cylinder liners are used, making direct contact with the water in the jackets. Vacuum servo brake

operation is used for all shown Dennis models this year.

Guy, who has done more than any other British maker to popularize six-wheeled buses, introduces two new models, both four-wheelers, though continuing the six-wheeled types standard hitherto. The two new models are a chassis for 50-seated double-deck buses and a six-ton truck chassis. The latter has forward control and is a high-speed model fitted with pneumatic tires and four-wheel brakes with vacuum servo operation. The engine is a six-cylinder, with the 45-deg. valve arrangement peculiar to other Guy engines. The bore and stroke are 4¼ by 5½ in. Engine and transmission separate, but both mounted on a sub-frame with three-point support. The two-piece propeller shaft has a self-aligning bearing at the center and Spicer joints. Steering is of the cam type; the ball joints of the tubular drag link and cross-rod are lubricated by a wick fed from an oil supply within the tubes.

Four Leyland Trucks

Leyland heavy-duty trucks designed for solid tires are supplemented by four new models for high-speed operation, three of these being four-wheelers and the other a six-wheeler, the first of this type to be produced by Leyland with four-wheel drive. Intended for 12-ton useful loads, or a 2500-gal. tank, the six-wheeler has a six-cylinder engine of 4 9/16-in. bore and 5½-in. stroke, developing 72.7 b.hp. at 1000 r.p.m. With a worm drive ratio in the rear axles of 9.33 to 1 and 40 by 8 in. pneumatic tires, the road speed on high is 12.6 m.p.h. at 1000 r.p.m. The engine has an overhead camshaft with special provision in the drive to render the cylinder head easily detachable without upsetting the timing. A point of note is that the valve seatings are centrifugally cast in the head. The cylinder blocks also have separate liners of centrifugally cast iron with which the water makes contact. The crankcase is of aluminum and extends much below the center of the seven-bearing 2¾-in. diameter crankshaft. Lubrication is forced throughout by a gear pump from a 3¼-gal. aluminum sump.

In unit with the engine, the four-speed gearset has ground gears and a single sliding and rotating rod control to the gearshift lever attached to the engine for forward control. Steering is by Marles cam gear. Five Spicer universal joints are used for the three propeller shafts, the latter consisting of two between gearset and mid-axle and a coupling shaft between the latter and the rear axle. Each axle casing is a one-piece nickel-steel forging with overhead worm drive, and is of the full-floating type with 2¼-in. diameter shafts. Torque rods with ball joints transmit driving and braking stresses. The foot brake applies to all six wheels through the agency of three vacuum servos; the hand lever actuates separate shoes in the same drums on the four bogie wheels only. All shoes are interchangeable. Chassis lubrication is by grouped nipples in accessible positions.

The other new Leyland models are all four-wheelers intended for four, six and seven tons respectively.

Another new six-wheeler for heavy but fast trucks is the Maudslay, intended for 10-ton useful loads. This chassis differs, however, from the majority of British six-wheelers in having only one driving axle; the third pair of wheels are load carriers only, and run on a solid axle that is attached by means of bell crank levers to the rear ends of the half-elliptic springs above the driving axle. Spherical bearings are used for the bell-crank levers on the ends of a tubular cross-member, to insure that each of the four wheels carries its proportion of the total load.

The engine is a four-cylinder with an overhead camshaft driven by spiral bevel gearing; bore and stroke are 5 by 6 in. The magneto (with impulse starter), oil and water pumps and generator are driven from the rear end of the crankcase. This new Maudslay is one of the very few British chassis in which a cone clutch is used. There is a separate four-speed gearset on a continuation of the engine sub-frame; thence a short propeller shaft runs to double-reduction gearing in the rear axle with a ratio of 8¼ to 1. The axle casing is formed from a forging of nickel-chrome steel, and is of horizontal banjo design with square section extensions to the spring brackets; the final drive is located in an aluminum casting bolted to the top of the banjo "ring," an aluminum oil sump being below.

Vacuum servo braking is applied by hand to the four rear wheels only, the pedal taking effect upon contracting shoes to a drum behind the gearset. This is the only instance in British practice of a servo being used with the hand-operated brakes. The driving wheels have dual tires (40 by 8 in.), while the trailing wheels, like the front ones, have singles. The wheelbase (between front and driving axles) is 14 ft. 6 in.; the driving and trailing axle are 3 ft. 10 in. apart.

Maudslay Bus Chassis

Another new Maudslay is a drop-frame six-cylinder bus chassis, the engine having a bore and stroke of 4¼ by 5⅛ in. and developing 100 b.hp. at 1700 r.p.m. Centrifugally cast "wet" cylinder liners are used, the cylinder block and crankcase being a unit casting in aluminum. Valves are overhead, inclined at an angle of 45 deg. in two rows and operated through forked rocking levers and sleeves from two camshafts located below the cylinder head joint. Spark plugs are central in hemispherical combustion chambers. Die-cast aluminum pistons and duralumin connecting rods are used. The radiator, with thermostatic control, is mounted on the engine. All accessories are on the left side of the engine to afford accessibility in conjunction with the forward-drving controls on the right.

Confining itself hitherto to 1-2½-ton truck chassis, Morris has produced two new models for 20 and 28-seated high-speed buses. Both have six-cylinder engines, but these differ appreciably in design and dimensions. The 20-seater has an L-head engine, 3.34 by 4.92 in. bore and stroke, and developing 74 b.hp. at 2700 r.p.m. There is nothing unorthodox in this chassis, with four speeds, spiral bevel drive (6 to 1), a wheelbase of 168 in. and 63¾-in. track; it weighs 2780 lb.

Just Among Ourselves

How to Read and Read Quickly

NO matter what sort of a job you have, no matter what department of the automotive business you are in, please don't fail to read Walter B. Pitkin's book on "The Art of Rapid Reading." We know you'll like it; we know it will do you good: And—only incidentally, of course—we think it will help us if you do read it.

Why? Because this practical professor tells, in this brief volume, why you should read business papers, as well as other types of reading matter related to your daily business life, and then goes on to show you in detail how you can absorb more of what you read and how you can read more quickly.

* * *

The "Front" of Today's Activity is Business

THERE'S more going on in the realm of the automobile trade," Pitkin says, "than was happening in all of Europe a generation ago. . . . The sales manager who fails to survey the morning's report of affairs that touch his field will soon make a ghastly mistake. The investor who is contemplating purchase of copper stocks becomes a mere gambler if he ignores the latest news about the copper industry and every trade that affects it. Thus throughout the entire range of business, finance, politics and manufacturing."

He tells how you should select your reading as you go through magazines or business papers. "Whenever you dawdle over printed words which neither enlighten nor amuse you," he says, "you are partly committing suicide. Time is life."

* * *

We Editors Need It Just as Much

WHILE the book is directed mostly at men like those who subscribe to this publication, it has much in it of use to business paper editors like ourselves whose job it is to provide you with the best and greatest quantity of information in the most readable form possible.

"If all authors wrote well," Pitkin says, "the art of grasping the essential from what you read would be an easy one to teach. For then you would find the central thought clearly stated in the opening lines of the article. You would also find the major subdivisions indicated in a clear visual form throughout the text."

"Fortunately," he continues, "most of our scientific and technical journals are approaching this ideal—though some have still a long mile to travel."

Frankly we think Mr. Pitkin is too kind to us business paper editors in this last statement. Personally we think that most of us have a good many long miles to travel yet.

* * *

Comments Are the Sinews of This Battle

IF we could get more comments, criticisms and reactions from you who read our publications—and we know you read this one because we get well over 80 per cent subscription renewals—our editorial job of trying to present material in more readable form could be pointed more directly to its objective.

Anyway, we like to get mail from our friends. . . . Just to get going along this line, why don't you drop us a line after you have read this Pitkin book and tell us, in the light of your reading of it, how you think *Automotive Industries* measures up to your needs as a busy-man reader?

It Can Be Done—Even In October

AUTOMOBILES can be sold in October, even with stocks falling terrifically and although buyers are relatively gun shy. How do we know? Well, one group of about 16 dealers operating under a metropolitan distributor last month sold twice as many automobiles as in October, 1928 — and October, 1928, was a fair month for the particular car in the particular territory. Due to a special contest or effort? Yes, certainly. But the cars were sold—and an equal number of used cars were sold as a part of the contest. Total used car stocks for the territory were not as high when the contest ended as when it began.

* * *

Tough Merchandising Calls for Plain Hard Work

MANY sales executives are out in the field this month trying to find out what's the matter with sales. Looking for basic trends is excellent work, but it's our humble opinion that the average individual factory executive isn't going to be able to do much with them when, as and if he finds them.

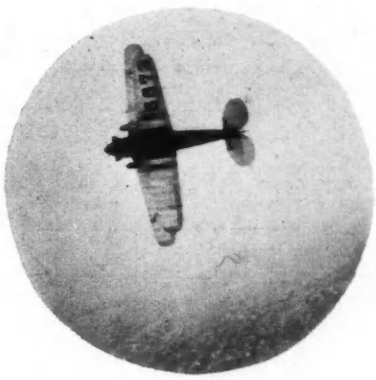
This seems to us to be a time when every effort should be concentrated on doing forcefully and vigorously all of the sound, practical things that every sales manager in the industry knows will help better to sell his products. It's a good time to concentrate on intensive, hard merchandising work—making every sales operation, method and contact — more effective. Let the economists chase the butterfly-like trends for you, if you must have them at once.

—N. G. S.

Waco Aircraft Production Methods Follow a *Definite Schedule*

New plant at Troy, Ohio, was built to meet requirements of quantity output, and enables company to manufacture all parts of its four models, excepting forgings and castings.

THE Waco Aircraft Co., Troy, Ohio, maker of Waco airplanes, is now occupying a complete new plant, which was built with special regard for the requirements of quantity production of planes. Production in the new plant, from receipt of materials to delivery of the finished planes, follows a definite schedule which is comparatively simple in operation because of the fact that, although the Waco Aircraft Co. makes four models, all of them possess the same general characteristics from a production point of view. For example, all the planes are of the two-cockpit, three-passenger type, which materially simplifies fuselage construction.



A Waco in a vertical bank during a test flight

With the equipment in the new plant all parts of the airplane, excepting castings and forgings, can be manufactured. From the receipt of raw materials to the final fly-away or delivery to cars inspection is constant. Quantity production has been made possible by the methods herewith described.

Airplane spruce is received in a semi-finished condition, and is subject to four inspections. After machining to size, the inspectors again check it up, initialing and dating each piece. The equipment in this department consists of jig, rip and rotary saws, planers, shapers, sanders and grinders and other woodworking machinery. Collectors attached to each machine carry the waste from woodworking installations through a vertical "cyclone" to the incinerator.

The ribs are of a truss design with upper and lower cap strips of spruce with vertical and diagonal intermediates. At each intersection gussets of mahogany plywood are glued and nailed on both sides of the rib, assembly being over rigid steel-back assembly jigs of Waco design. The glue used is mixed fresh four times a day, and the placing of all nails has been worked out scientifically to get the best results.

The trailing edge is of copper-coated steel, Kawneer V section, squeezed and soldered into place and held with the aid of copper tie strips. The wing tip is made of spruce, and consists of four laminations. The aileron mounting is by means of metal hinges, anchored to a false spar. Dural cap strips approximately 12 in. long are spaced between the ribs.

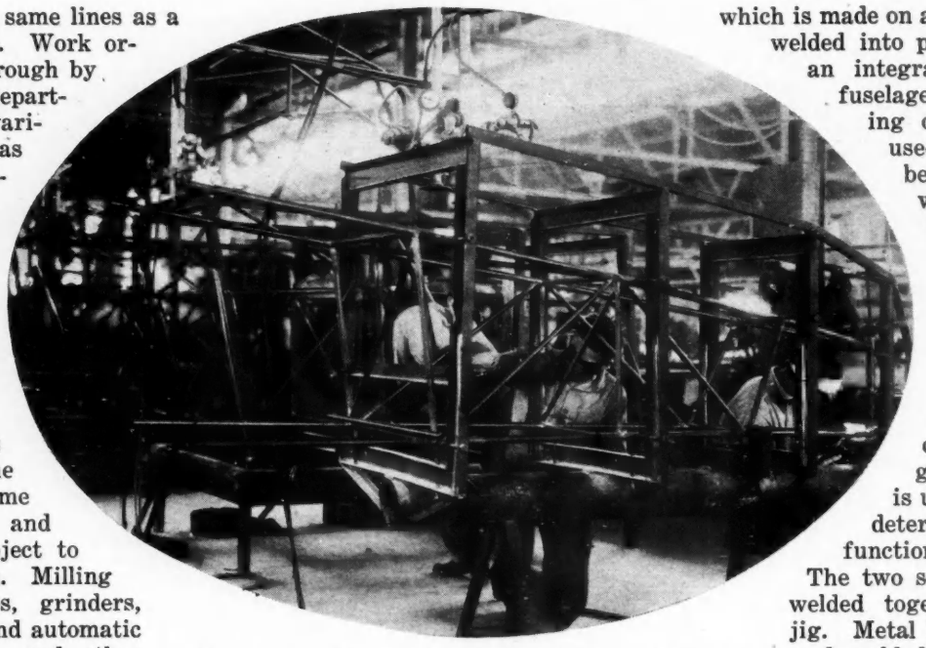
After receiving a coat of varnish as a preservative, the wing, and center sections have the fabric covering sewed on. This fabric is Grade A airplane cloth, of long staple Egyptian cotton of very close weave. The coverings are first cut to a pattern and machine-sewed, double-stitched, and made similar to a slip cover. The cover is slipped over the wing and then tacked and hand-sewed in place. Reinforcing tape is sewed around each rib contour. Similar envelopes are made for the center section and tail surfaces and applied in the same manner.

Welding the frame of a stabilizer in a flat jig at the Waco Aircraft Co. factory

The fabric covering of the wings, fuselage, center section and tail surfaces are first treated with three coats of "dope," each coat being sanded. Because of the close weave of the fabric and method of applying the dope, the fabric is not translucent. Two coats of aluminum paint are next sprayed on for keeping out the actinic rays, after which the desired color coats are put on.

The machine shop is op-

erated along the same lines as a commercial shop. Work orders are sent through by the planning department for the various parts such as wing fittings, aileron tubes, hinges, tension plates, which are made up and carried in stock against orders from the assembly departments. Job time cards are kept with the International Time Clock System, and each job is subject to close inspection. Milling machines, lathes, grinders, punch presses and automatic screw machines and other such equipment are installed. A "Famous" band saw is used for cutting all-steel tubing, and a Long & Alstater shear with a capacity up to 5/16 in. for bar and plate cutting. A Becher milling machine mills out the ends of tubes used on the fuselage, cutting them on a radius for better fitting. The nose ribs of duraluminum are stamped out on a Minster press.



The rear section of the fuselage is assembled and welded in a square jig, as can be noted in the foreground of the picture above

All tools and dies are made right in the shop. Monarch lathes, American shapers, Cincinnati milling machines, Thompson grinders and similar machines constitute the equipment.

The cockpit cowling, motor cowling, instrument boards, spinners, landing gear streamlines, seat, doors, inspection plates and other aluminum parts are made over master forms. Being first formed by hand, an electric hammer completes the shaping. The metal is then filed, sanded and rubbed before painting, and is as finely finished as is customary in automobile body factories. The cowling for the Hisso models is stamped out of aluminum.

Gasoline tanks are made of terne plate with two full-size baffle plates. The seams are first turned, riveted and then soldered. A 1-qt. sump is riveted and soldered to the bottom. On the cowling, all edges are turned over a wire shaper which acts as a stiffener for the beading.

The side walls are placed in a box jig, where the eight lateral and nine diagonal braces are welded. The engine mount, which is made on a separate jig, is welded into place, making it an integral part of the fuselage. No wire bracing of any kind is used, the fuselage being a rigid unit when completed. The aft section is of four bays with 8 vertical and 10 diagonal braces on the side walls, and 8 lateral braces with 7 diagonals. The gage steel that is used is of course determined by the function of the part. The two sections are then welded together on a flat jig. Metal bosses are fitted and welded into the holes for the engine mounting.

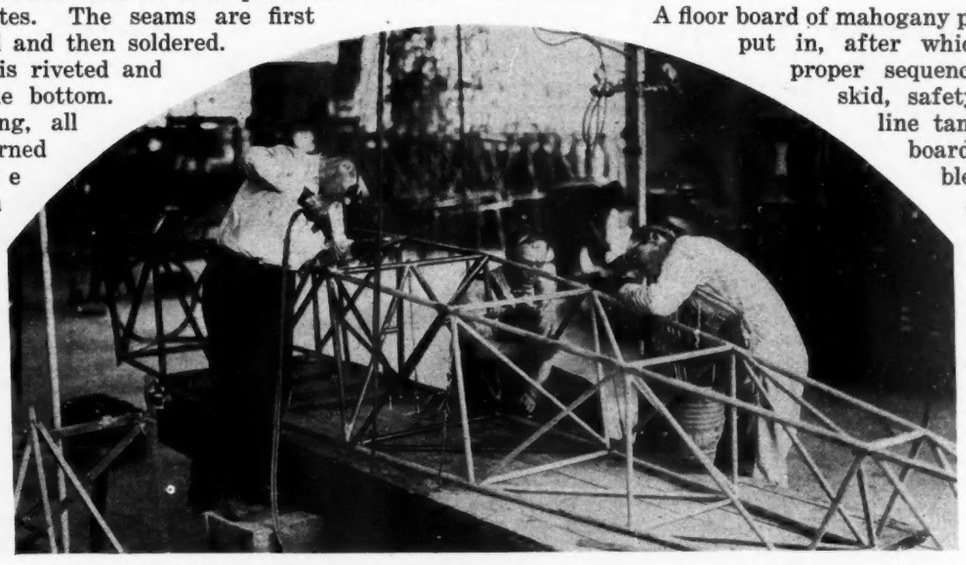
In this department there are over 65 welding torches. The oxygen is piped to the various outlets from a battery of 20 cylinders, and the acetylene, which is generated in a separate building, is carried in pipes paralleling. Separate control valves are located close to each operator.

After fabrication, all metal parts are thoroughly sand-blasted, a method originating in aircraft construction with Waco. The sand-blasting not only thoroughly prepares the surface for the metal preservative that is used, but it also permits of closer inspection of the work.

After inspection, the bare fuselage is sprayed with a red lead primer and then a metal preservative, and goes to the assembly line. First, specially designed spruce fairings are taped on the sides and bottom of the fuselage and well shellacked. Tape is stripped along the fuselage wherever the fabric is apt to touch it, as a precaution against the doped surface affecting the preservative used.

A floor board of mahogany plywood is next put in, after which follows in proper sequence, seats, tail skid, safety belts, gasoline tank, instrument boards, controls, cables, fire walls and other equipment.

The dual controls are of the push-pull tube type with fiber tubes for bearing surfaces at points accessible for inspection and greasing. The turtle deck is of



After the front and rear frame sections of the fuselage are completed they are welded together as pictured above, with cables and turnbuckles used for rigidity of the parts during the operation

spruce and is nailed in the fairings. Fabricoid is used for lining both cockpits, the seats of which are upholstered with padding covered with fabricoid. The cockpit cowling is edged with leather padding around the openings, no crash pad being used. After covering, the fuselage goes to the paint room.

After the fuselage has been painted, it is taken over to the second assembly line where the engine is mounted, the center section and tail surfaces installed and the landing gear put on. The center section is installed with N-struts determining the positive stagger. Two cables are used for lateral stability. In the OX and Hisso models, the radiator is suspended from the center section, and in the case of the Hisso models, a wind-driven pump, supplemented by an auxiliary hand pump in the rear cockpit, is installed as standard equipment.

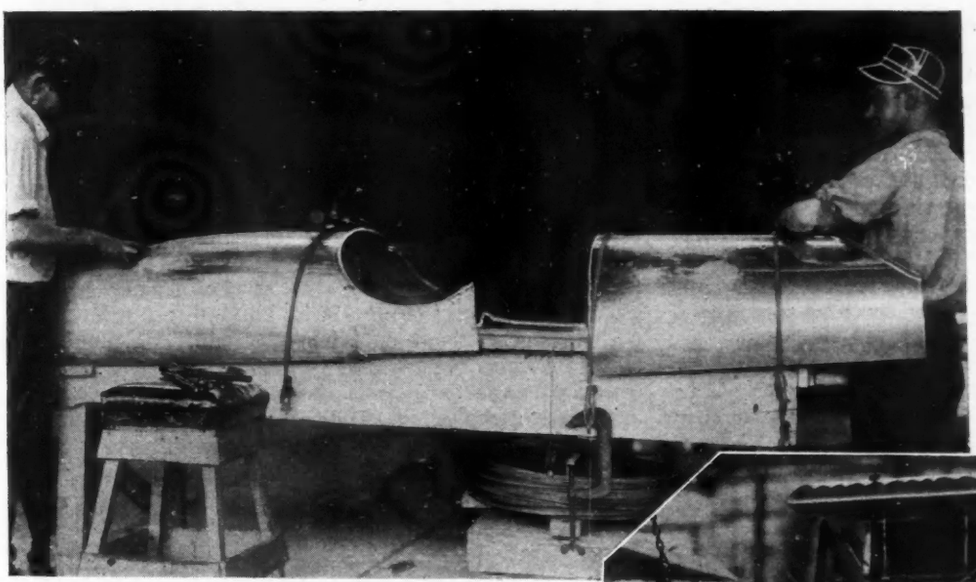
Head rest, cockpit covers, doors and seat cushions are put in by this department. In this department, also, engines are overhauled and rebuilt. They are then block tested before being mounted. In cases where the customer supplies the engine, it is subjected to a block test.

The wings, using two wing struts and one aileron strut, are rigged with MacWhyte streamline wires. The landing wires are attached at the upper end to a double center section wing fitting and at the lower end to a double wing fitting at the base of the struts. The lower end of the front flying wire and drift flying wire attach to a welded wing fitting on the fuselage, with the upper ends running to the fitting at the top of the struts. The antidrift flying wire and rear flying wire are fastened to the welded fitting on the fuselage below the front cockpit and at the top of the struts.

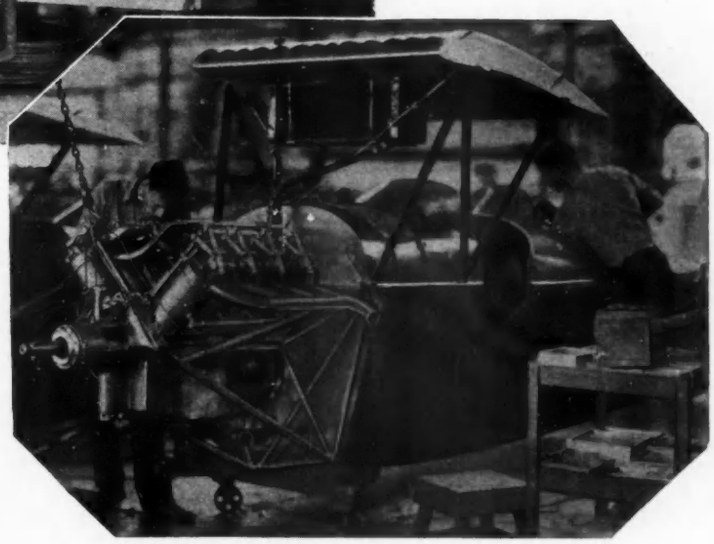
After the wing section of the Waco is inspected, fabric covering, fitted to the exact measurement of the frame, is slipped over it

The Advance Aircraft Company was the name of the parent organization. It was capitalized originally with only $12,000, and it is significant that the entire project of the new factory buildings, land, machinery, etc., should have been financed out of earnings on this original capitalization of 100 shares outstanding at the par value of $100 each. In April, 1928, the Company was reorganized under the laws of Ohio and the capital stock was increased to an authorized 62,500 no par shares.

In May, 1929, the name of the company was changed to the Waco Aircraft Co. and the stock structure was further increased with an authorized 200,000 shares no par, leaving 55,000 shares unissued. Recently a small portion of these shares was sold on the market. A minority interest in the Waco Aircraft Co. has been purchased by Aviation Corporation, the control of the company remaining in the hands of the President, Clayton J. Brukner.



Before assembly into the finished unit (left), the sheathing for the cockpit and nascelle is molded over a trued form at the Waco plant



One of the major assembly operations, that of mounting the engine and middle wing section, under which radiator for water-cooled powerplants is mounted, is shown below

German Fire Equipment Has Revolving Ladder

Operating mechanism on the Magirus truck is of the hydraulic type, with all motion controlled by a single lever.

Magirus motor rotary ladder, extended and mounted, in front of the Rathaus (City Hall) in Ulm, Germany

MOTOR-PROPELLED fire-fighting equipment of a somewhat different type from that customarily employed in this country has been developed by the C. D. Magirus Co. of Ulm, Germany, which recently established a subsidiary in this country, the American Magirus Fire Appliance Co. of Indianapolis. The ladder wagons of this firm possess particularly interesting features.

The Type KL revolving ladder is mounted on a truck chassis powered by a 55-hp. engine. The chassis, which is equipped with four-wheel brakes, is said to be light and robust and to permit of unusually rapid operation of the ladder. A speed of 30 m.p.h. can be attained, and the pneumatic tires permit of maintaining this speed even on rough rods. In order to assure (with pneumatic tires) steadiness of the ladder even when inclined at large angles, a rigid supporting spindle is provided on each side at the rear of the chassis. The required personnel can be transported on the seats in the driver's compartment and either sitting or standing on the platform of the vehicle.

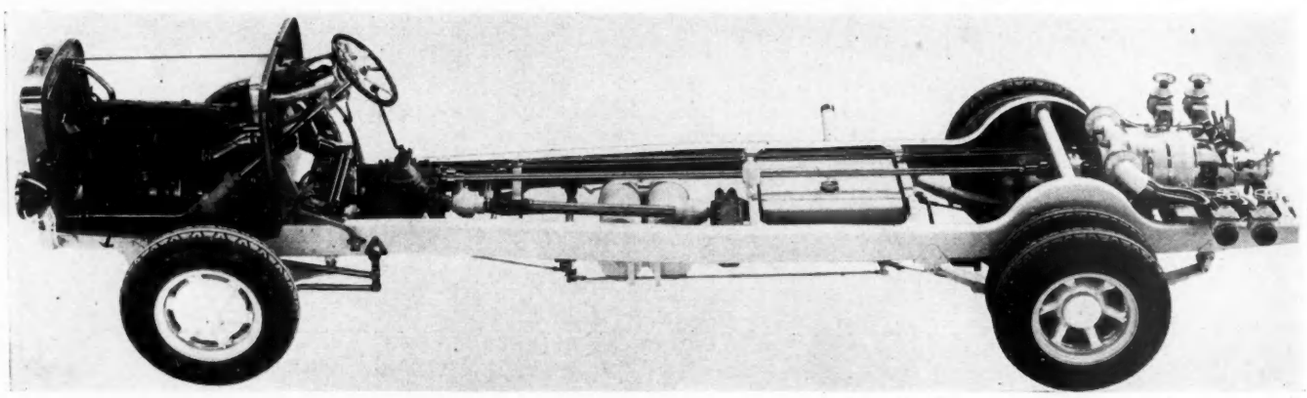
The ladder-operating mechanism with hydraulic control is built into a bolster at the rear and serves to raise and extend as well as to lower the ladder. All of the motions can be controlled from a single point by means of a lever. The movements of the control lever correspond in direction to the movements of the ladder. Automatic stops are provided for all motions, which prevent faulty operation.

Rotation of the ladder unit is effected by hand by means of a self-locking worm drive, the resistance to this motion being reduced by the use of a ball mounting ring on the bolster. An inclinometer and an altimeter are provided as aids in the correct operation of the ladder.

The Magirus company also manufactures motor fire pumps. One of its most recent types was specially developed for the city of Stuttgart, Germany, and is known as the Stuttgart model. Features of the chassis are a 180-in. wheelbase, left-hand drive, Simplex cast-steel wheels with giant pneumatics, four-wheel brakes with Bosch-Dewandre vacuum control, and in addition a rear-wheel brake with hand control. The engine is a Maybach six-cylinder of 100 hp., with dual ignition, oil cooler, fuel economizer and back-fire proof carburetor.

The driver's compartment is completely inclosed and has two doors and accommodations for two men.

The high-pressure centrifugal pump located on the frame at the rear has a capacity of 600 gal. with a maximum height of throw of 260 ft. at 2300 r.p.m. At 2700 r.p.m. it can throw from 190 to 260 gal. per min. under a pressure of about 300 lb. p. sq. in. The pump has three pressure ranges and is provided with a Magirus dry air pump. Bronze is the material of construction employed in the pump. Drive of the pump is through a power take-off from the transmission of the chassis through a Faudi propeller shaft, which latter is made tubular and in two parts to obviate whirling.



Low-frame chassis for motor fire pump with Magirus high-pressure centrifugal pump built in. Capacity, 800 gal. per min.

Better Rough Cutting Advocated for Production *of Gears*

Emphasis on finishing operations has obscured the importance of holding primary machining to closer limits, which would facilitate further processing.

By H. D. TANNER
Manager, Gear Division, Pratt & Whitney Co.

IN the last few years much has been written and more has been said about various methods of finishing the teeth of the gears used in automobile transmissions. There is a much neglected, though closely allied subject, which should receive some attention—that is, the first or so-called "roughing cut" on a gear.

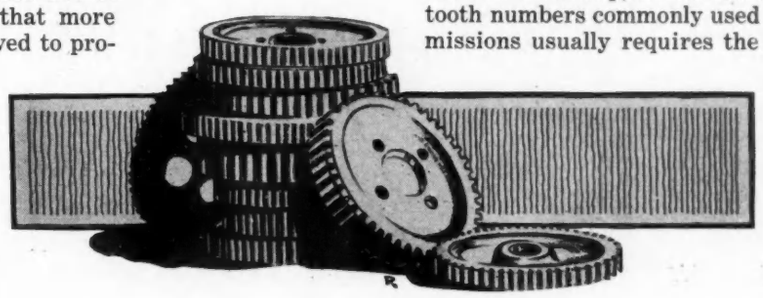
This operation usually seems to be considered merely a necessary evil; a thing which has to be done but which has little or no effect upon the final finishing of the gear. The degree of quietness demanded today requires an accuracy in the finished gear which does not permit of much laxity in any of the machining operations. Results are expected which several years ago would have been considered possible only with ground tooth gears, and they are expected without additional cost.

We are attempting, with considerable present success and a promise of complete success, to finish-cut gear teeth to within 0.0003 in. of perfection in spacing and profile. A gear tooth grinder would not be asked to do much better than that. The result of the heat treatments applied after this cutting is another long story, but should not prevent us from sending them to the fire as nearly perfect as possible. Metallurgists are acquiring a control over their processes which makes it difficult for us to call them to account very often. Let us make the reverse action just as difficult.

Tolerances on Roughed Gears

We are not aware of any gear-finishing machine which is so nearly perfect in operation or so nearly rigid in construction that it is not affected by too inaccurately roughed gears. It does not seem unreasonable to ask that the errors in the roughed gears be not over three times those which will be accepted in the finished gears.

It is possible, without adding much, or even anything, to the cost, to rough-cut gears with spacing and profile errors not over 0.001 in. and with runouts not over 0.003 in. The surface of the teeth need not be so badly gouged and torn that more than 0.002 in. need be removed to produce a good finish. It is not necessary to leave more than 0.015-in. thickness for finishing on the tooth. If you are exceeding the above limits you are unnecessarily handicapping your finishing machines, which are intended for a precision process, and should be required to remove only the minimum necessary amount of material.



The foregoing figures are not fancies, but facts. Roughing within those limits is being done and is paying dividends. It cannot, however, be done with worn or neglected machines, nor with inaccurate or dull cutting tools. Any of the standard machines which are being used for this purpose are capable of this accuracy when properly used and cared for. The same methods of holding gear blanks should be used for both roughing and finishing, and the roughing equipment should be in as good condition as the finishing. The thought, often expressed, that "anything is good enough for roughing" is a costly one.

Only Involute Finished

Only the involute profile should be produced by the finishing machine, the remainder being produced by the roughing machine, thus removing all unnecessary strains from the finishing machines. This roughing can be done by the use of hobs or shaper cutters with slightly thickened points which undercut the teeth at the base circle. This method has been adopted by the maker of one of the world's finest automobiles for roughing spur gears which are finally ground on their tooth profiles, and for helical gears which are finished by lapping. It is being experimentally used by others for gears which are finished by standard methods.

It will be said that undercutting weakens the gear teeth. It does, but if properly done, the teeth are not over 5 per cent thinner at the base circle than non-undercut teeth. If your factor of safety is too small to allow of that much weakening, a 22½-deg. pressure angle system can be used, in which an undercut tooth is stronger than a non-undercut 20-deg. tooth.

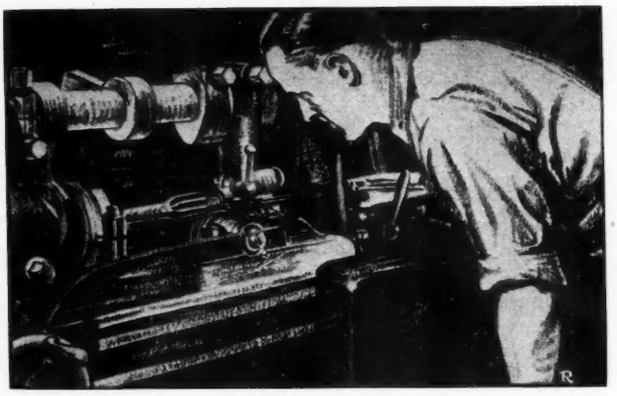
In addition, the use of the higher angle, 22½ deg., and in some cases 25 deg., results in the removal of another handicap, as the 20-deg. system for the tooth numbers commonly used in passenger transmissions usually requires the use of the involute too close to the base circle.

Preliminary investigations of a special 22½-deg. spur gear system have shown very encouraging results in added

ease of getting quiet transmissions. One leading transmission builder is putting this system into production on a four-speed all-spur-gear transmission, and will probably use the system on all new designs.

The growing use of the internal spur gear in transmission design has shown that there is nothing objectionable in the higher pressure angles, as 25-deg., 27½-deg. and 30-deg. angles are commonly used. In fact, the designer is forced to high angles for this particular use of internal gears and thus automatically gets lower sliding velocities between the teeth, with a resulting lessening of noise. It would seem that a little of the same treatment should be applied to the external gears, that they be not ashamed to appear in company with the internal gears.

The high-pressure angle, stub-tooth helical gear has possibilities in low sliding velocities which do not seem to have been thoroughly explored, although there are rumors of a transmission which will probably be built on this basis.



There seems to be a misconception in the minds of many as to the reasons why an internal gear drive is quieter than an external. It is thought that internal gears have more teeth in contact, with a resulting lower tooth load, which makes them quieter, although there is plenty of published information to the contrary.

As used in transmissions, internal gears usually have *fewer* teeth in contact and higher tooth loads because of the higher pressure angles. There are several pairs of teeth which are nearly in contact for some time before actual theoretical contact, and when running in oil these teeth probably carry some of the load through the oil. Tooth deflection under a heavy load may also bring these teeth into contact. This, however, does not explain the fact that the internal drive is also quieter than the external when running without oil and with a load too light to deflect the teeth enough to bring extra teeth into contact.

Perhaps a few definite figures will clear up the mystery. In a certain transmission there is an internal gear drive which, at an engine speed of 2000 r.p.m., has a maximum sliding velocity between the teeth of 35 ft. per min. That is not very fast and the gears are almost noiseless. The same transmission, however, has an external constant mesh pair of gears which at the same engine speed have a maximum sliding velocity of 533 ft. per min. That is over 15 times the sliding velocity of the internal drive and explains why the external gears are *not* almost noiseless.

The helical gears mentioned above as being finished by lapping have, because of the undercut, a rather short, active profile. They are used for constant mesh gears, and at the same engine speed of 2000 r.p.m. the maximum sliding velocity is 227 ft. per min. That is faster than the internal pair, but much slower than the external spur pair, and indicates some of the possibilities of helical gears. All of the velocities given are at the instant the tooth action starts.

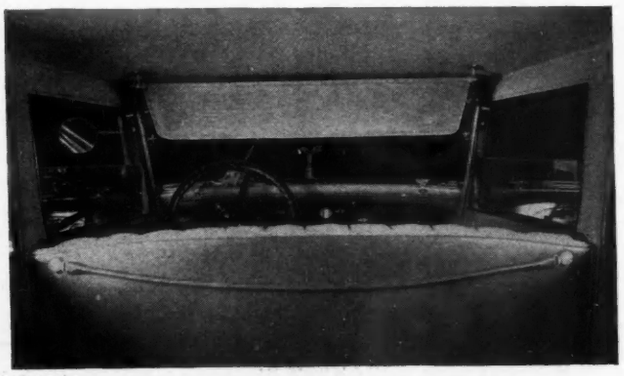
The major cause of noise in gears is the impact of the teeth as they come into action, caused by errors from cutting, hardening or deflection under load. With the same errors, the noise will vary according to the speed at which the impacts take place and the sliding velocity between the teeth is a very good measure of that.

The present type of transmission, with the probable change to, or addition of, the internal or helical gear for at least one of the speed ratios, is going to be used for many years more, but it must continue to be improved. The gearmaker is no longer blamed for all of our transmission troubles, but he can yet make better gears and get better results by so doing.

Rolls-Royce Inside Visor

ALL of the enclosed Rolls-Royces for 1930 are provided with an inside visor or anti-glare shield which, when not in use, lies flat against the ceiling of the driving compartment, but which the driver can adjust to any required angle instantly by a mere movement of the hand without taking his attention from the road.

Rolls-Royce is offering this visor in its new models, in single and double types, as a substitute for the exterior visor now in universal use, because it feels that the old-fashioned outside visor obstructs some of the view from the inside of the car and also forms a mirror effect which, itself, produces glare in night driving. The adjustability of the new Rolls-Royce interior visors is another point in their favor, especially when driving into the setting sun. In the case of the double visors, both occupants of the front seats may adjust them to suit themselves. These visors are trimmed with upholstery material to match the trim of the car and are mounted on substantial metal frames. Lying flat against the ceiling, they are entirely out of the way when not in use. This is a development of the old Brewster roller type visor. Its utility has been greatly extended by its transformation into a swinging device.



Rolls-Royce adjustable anti-glare shield

THE FORUM

Temperature Limits of Generators

Editor, AUTOMOTIVE INDUSTRIES:

The article "Cooling of Generator Depends Upon Location on Engine" in the Sept. 7 issue is very interesting. However, in view of research work which we have done with generators on air-cooled cars, I can see no reason for going to the extremes as outlined in this article. My reaction is that if, with foreign-built generators, it is necessary to force air over them, then our American generator designers should be complimented.

Analysis of generator failures has shown that the majority of these resulted from overheating after continuous high-speed driving. A further analysis showed that the generators which had failed had a peak efficiency of 65 to 70 per cent at 25 m.p.h. and an efficiency of only 25 per cent at 50 to 60 m.p.h. Since an owner seldom drives for any length of time at 25 m.p.h., it was concluded that the efficiency at peak could be sacrificed safely providing the high-speed efficiency was raised. A group of generators having peak efficiency of 60 per cent and high-speed efficiency of 50 per cent were run for thousands of miles and proved our deduction to be correct. Furthermore, these generators were operating with an air temperature around them of 180 to 200 deg. Fahr.

The article also states that the temperature of the generator housing must not exceed 150 deg. Fahr. This seems to be about 100 deg. Fahr. lower than necessary. Our American-made generator will run indefinitely with the housing at 250 deg. Fahr. Most failures which are designated by the service men as "burned out" are due to the mechanical failure of the insulation on the conductors and not to disintegration of the insulation from heat.

There is much to be written on the engineering side of the automobile generator, consequently the article is appreciated, although we cannot agree with the authors in the entirety.

C. T. DOMAN,
Research Engineer,
H. H. Franklin Mfg. Co.

Clutches for Bus Powerplants

Editor, AUTOMOTIVE INDUSTRIES:

During the recent A.E.R.A. convention at Atlantic City the visitor could not fail to be impressed with the increasing size of the buses exhibited, and wonder if certain apparently small details were not being overlooked in the anxiety to feature some body change as an improvement.

The writer spent a number of days at the convention and was surprised at the number of inquiries received at a certain booth for parts to interchange with similar parts supplied by practically all bus makers. In every case the same complaint was made regardless of the make of bus or operating conditions, complainants ranging from an operator of three buses to a large corporation which operates several hundred.

The writer obtained a list of these complaints as applying to clutches and visited a number of bus exhibits, and in talking with those in charge was surprised to find the complaints universally denied.

This leads us to ask a few questions which may be of general interest to bus designers at large.

1. Has passenger car and truck precedent been followed too far?
2. Has the design of bus been made with a view to using parts readily obtained in the open market, or with an honest desire that the bus shall give service in every respect?

As a designer of clutches for use in the industrial field, the writer has learned that a clutch that is a success under one set of conditions is a rank failure under another set. In both cases the prime mover would be running at the same speed and have the same horsepower rating.

Or to express it differently, a clutch which would be amply large for a centrifugal pump with a capacity of 1000 gal. per min. would be very much under capacity for a triplex plunger pump of equal capacity. It would, therefore, seem that a clutch of proper design and capacity for a truck would be totally inadequate for bus service, even though the engines have an equal rating. This viewpoint is apparently correct, because the present trend in engine design is toward larger powerplants of better and heavier construction; in fact, to the casual observer it looks as though the thing most desired was more bearing surface and greater rigidity, the same as in marine design.

If this viewpoint is correct—and twenty years' experience on similar problems leads to the belief that it is—why is so important a part as the clutch given such small consideration as the evidence collected at Atlantic City would tend to show?

An expression from other engineers interested would be interesting.

R. G. DICKENS,
Engineer, The Hilliard Corp.

Rear Axle Lubrication

Editor, AUTOMOTIVE INDUSTRIES:

I read the article in *Automotive Industries* of Oct. 5, 1929, on "Special Lubricants for Rear Axles," by A. Ludlow Clayden, with considerable interest. The Timken Roller Bearing Co. has conducted 75 laboratory tests, each of 100 or more hours' duration, within the last two years, on this same subject, and we are in agreement with most of the findings as disclosed in this article.

It has been our experience, however, that while the use of lead soap oils, as manufactured by most of the prominent makers today, are effective in preventing gears from being scored, these oils have an abrasive characteristic which is very detrimental to the life of anti-friction bearings. Our tests show that from 50 per cent to 100 per cent more bearing wear occurs with these oils than with straight mineral oil.

If special oils can be developed which will have the good properties of preventing gears from being scored, and at the same time have no more abrasive action than straight mineral oil with good cold test properties, the present design of automobile rear axles will not be affected greatly. This appears to be a very difficult problem, however, and no remedy (as far as we are aware) has been found to date.

One phase of this problem is the fact that if special lubricants are manufactured which will be O.K., both for gears and bearings, the service problem, when oil changes are necessary, will have to be solved. Very few oil stations at present can supply anything but the regular grade of 600W oil for axles and transmissions, and a danger would exist that when the heavily loaded transmissions and axles which have left the factory with special lubricant may suffer from a lack of servicing of the "salvation" oils.

We feel, as Mr. Clayden remarked, "the ultimate answer will be a general redesigning of rear axles providing larger surfaces and so reducing the unit loading."

ERNEST WOOLER, Chief Engineer,
The Timken Roller Bearing Co.

Indianapolis Race Rules

Editor, AUTOMOTIVE INDUSTRIES:

For some reason or other your letter of Aug. 8 regarding the Indianapolis race rules for 1930 got mislaid. This, together with my absence from the city, has delayed my answer.

In regard to my opinion, I think Captain Rickenbacker is right. If the race is to be a help to development of automobile engines, it was necessary to change the rules to allow larger engines, as racing engines of 91 cu. in. capacity practically never were mentioned in designing automobile engines, as it was considered to be a racing engine only. Omitting superchargers and four valves per cylinder, and allowing engines with more cubic inch capacity, was the only way to get the requirements back to where they would be a help in the development of automobile engines.

To limit racing to stock cars only would not work out, as the public will demand more speed at the race than strictly stock models can be expected to give, so that the racing game would soon play out by reason of lack of interest.

I expect that many interesting and valuable facts can be learned from the racing cars of 1930.

Yours very truly,
E. S. MARKS, Chief Engineer,
H. H. Franklin Mfg. Co.

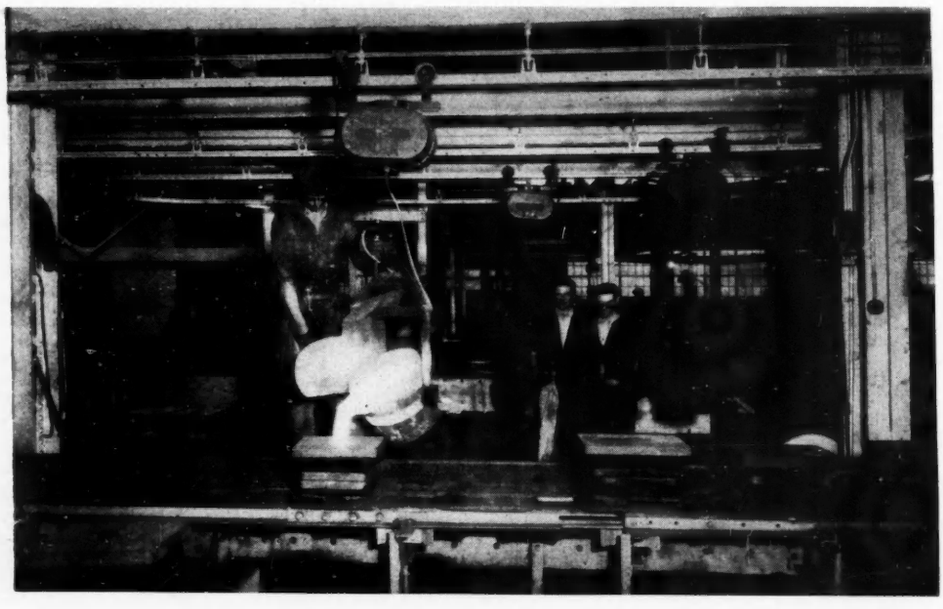
Super-Service as Dealer Aid

(Continued from page 710)

the tone of general business, Mr. Reeves said, although it may occupy a unique and independent position in this respect, as it has in past years. Lasting damage has not been done to the purchasing power of this country, he contended, because many persons still hold stocks and bonds from which they receive an independent income. Other advantages in favor of the industry which he listed included the fact that the American people still desire to use the automobile for business and pleasure, and that they are using 24,000,000 of them now.

Considering the automobile from the standpoint of its utility and necessity, Mr. Reeves said that if radio had to be eliminated everyone would be sorry but could continue to live, and the same would be true in the case of talking pictures, but that if the automobile were taken away the transportation facilities of the large cities and of the country would be swamped hopelessly.

Speeding Foundry Operation



A LARGE automobile manufacturing plant is speeding up its foundry pouring line to a considerable extent by means of the special pouring bucket shown in the accompanying illustration. This equipment was supplied by the American Engineering Co., Philadelphia, and consists of their ¼-ton hoist to which is attached the special pouring bucket.

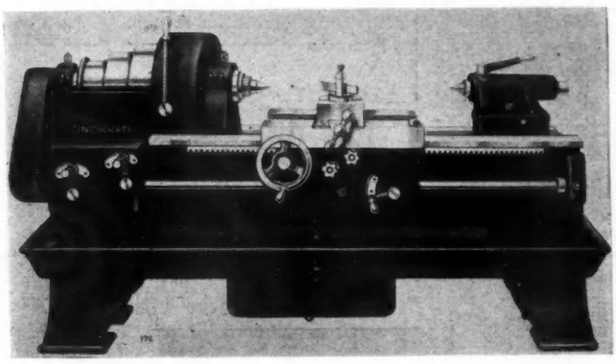
The chain conveyor on which molds move along past the pouring floor are in the foreground.

New Automotive Developments

Maxi-Production Lathe

THE Maxi-Production lathe, a new high-speed machine, designed to permit the use of cemented tungsten carbide tools, has been added to the line of the Cincinnati Lathe & Tool Co., Cincinnati, Ohio.

The headstock is of heavy construction and is



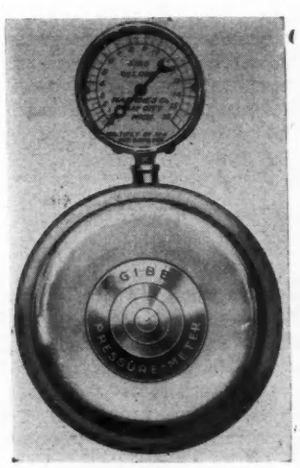
Cincinnati Maxi-Production lathe

shrouded to afford protection against the revolving pulley and the belting. It is available with or without back gears. The spindle is mounted on roller bearings and has a 2⅜-in. hole throughout. It can be run at 1000 r.p.m. or more to give best results with cemented tungsten carbide tools. The lever on the headstock operates a friction clutch and brake which stops and starts the spindle instantly.

The tailstock permits a wide range of adjustment at various angles of the compound rest. Either a quick-acting or the standard screw feed arrangement may be obtained. The feed box covers a wide range of feeds from the finest to the very coarse.

This lathe is available in bed lengths varying by 2 ft. from 6 ft. and up. Swing may be 17 in., 19 in., or 21 in., as desired.

Welding Pressure Meter



Gibb Pressure Meter

THE Gibb Welding Machines Co. of Bay City, Mich., has just placed on the market a welding machine pressure meter that indicates, in pounds, the pressure obtained at the welding electrodes.

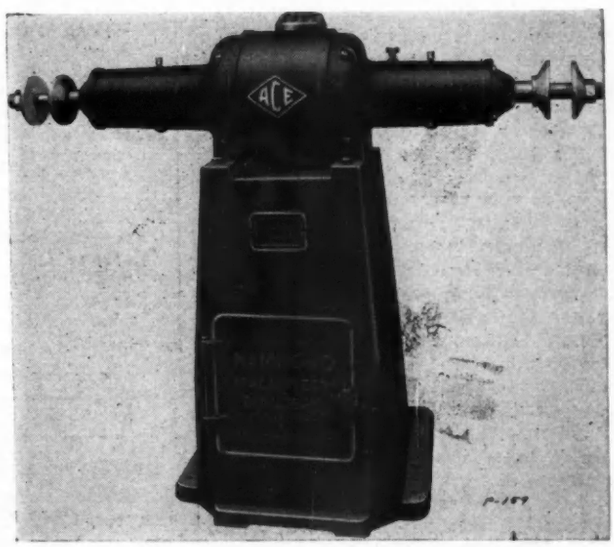
To determine a certain welding pressure, the oil-filled disk portion of the Gibb Pressure Meter is placed between the electrodes of the welding machine, and the pressure applied is registered, in pounds, by the indicating part of the meter.

The instrument is finished in high-polish chrome plate. It is small and compact, weighing about 2 lb.

Polishing and Buffing Lathe

THE "Ace" heavy-duty electrically driven polishing and buffing lathe is a new addition to the line of the Hammond Machinery Builders, Inc., Kalamazoo, Mich. The motor is totally inclosed and has no ventilating holes or slots, as clean air is supplied through "Air-Clean" (patents pending). The motor will carry a momentary load of 100 per cent above its rated capacity without overheating at or above 40 deg. C. A Cutler-Hammer automatic motor starter with push-button control is mounted on the door of the pedestal.

The spindle is mounted on four ball bearings which are provided with an oil cup, oil level gage and flushing plug. An oil overflow prevents surplus oil from entering the motor compartment. This machine is available in five sizes as follows: 3, 5, 7½, 10 and 15 hp. It is regularly supplied for 220, 440 and 550 volts, 25, 50 and 60 cycle, two and three phase, alternating current.

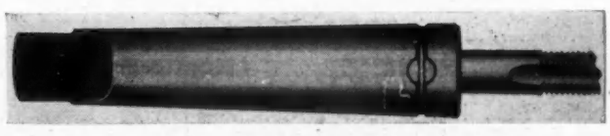


"Ace" heavy-duty polishing and buffing lathe

Floating Tap Sleeve

A NEW floating tap sleeve has been developed by the Apex Machine Co., Dayton, Ohio. The tap is driven by the square and is held in the sleeve. The bore and square of the sleeve being larger than the tap shank and square, the tap is free to float and follow the hole, thereby correcting misalignment between the tap and the work.

This sleeve is designed for single and multiple tapping operations and can be used in any position.



Apex floating tap sleeve

First with the News

Reliable, Accurate

News of the Industry

PAGE 734 VOLUME 61 *Philadelphia, Saturday, November 16, 1929* NUMBER 20

Stock Market Slump Puts Emphasis on Sales Drop

PHILADELPHIA, Nov. 16—Automobile sales in metropolitan sections have declined as a consequence of the stock market slump, and some cancellations of orders and a definite loss of interest by prospects have been reported. Sections of the country not directly affected by security trading apparently have felt no reaction, however, unless possibly a favorable one.

As a result of the reduction in money rates in financial markets, there has been a large flow of money to other sections with an easier credit situation resulting in the small town and country districts. In consequence of this, purchasing in other than metropolitan centers is expected to improve over the remainder of the year.

Some timidity has been exhibited by certain manufacturers who have abandoned production schedules for the rest of the year, but too much importance should not be attached to this condition in view of the fact that schedules for production in many of these plants are naturally very low at this time pending the introduction of new models.

Some of the finance companies show an increase in delinquencies while others indicate that so far persons who have already purchased cars are keeping up their payments normally. Repossessions cannot yet be taken as an index of the reaction to the recent securities market inasmuch as it will require a few months for actual loss of purchasing power to be reflected in this way.

From the production point of view, it is difficult to accept the argument that automobile factories in the United States and Canada will be able to match the output of 512,450 units turned out during the last two months of 1928, particularly as operating schedules as

(Continued on page 737)

Wilson Foundry Resumes

DETROIT, Nov. 12—The reopening of the machine shop of the Wilson Foundry & Machine Co. was announced yesterday by D. R. Wilson, president. The foundry was reopened last week in order to have a supply of castings ready for the opening of the machine shop yesterday.

Trainor Opens Ohio Plant

COLUMBUS, OHIO, Nov. 13—The Trainor National Spring Co. of Newcastle, Ind., has opened a Columbus branch factory to make springs.

Bidding on Plane to Cost $5,000,000

NEW HAVEN, Conn., Nov. 12—New York to London in six hours, in an airplane accommodating 500 passengers and a crew of 104, is a possibility of the near future, according to Harry R. Westcott, of Westcott and Mapes, engineers of New Haven, who said his firm has been asked to bid on structural work for the plane. The super-plane, Westcott said, may be built in New York at a cost of $5,000,000 each. His firm will submit bids within thirty days. The gigantic aircraft would have twelve 1000-horsepower motors.

Stinson Merges with Cord

DETROIT, Nov. 12—The merger of the Stinson Aircraft Corp., of Detroit, with the Cord Corp., of Chicago, has been effected. At a meeting of the directors of the Stinson Aircraft Corp., E. L. Cord was elected chairman of the board; Edward A. Stinson, president; William A. Mara, vice-president; Raymon S. Pruitt, secretary, and William R. DeField, treasurer.

Motorcycle Export Gain Expected

WASHINGTON, Nov. 14—Motorcycle exports from the United States will show a gain over the 1928 figures, it is estimated. September closed with a total of 13,386 for the first 10 months of the year.

Fisher and Olds to Reopen

DETROIT, Nov. 12—The Lansing factory of the Fisher Body Corp. will open Nov. 20 and the Olds Motor Works about December 9, it has been announced by officials of the plants.

Brosseau Cautions Transport Group

Must Learn Rightful Place of Bus, He Tells Rail Men

TORONTO, ONT., Nov. 13—A joint session today with the Motor Transport Division of the American Railway Association was the high spot on the four-day program of the Society of Automotive Engineers Transportation Meeting, being held this week in the Royal York Hotel.

The featured speaker was A. J. Brosseau, chairman of the National Automobile Chamber of Commerce truck committee. He cautioned those rail men who lack understanding of the rightful position of the bus and truck in the field of transportation with the observation that if they attempt to force a service on the public which it doesn't want, the public's will will prevail. Mr. Brosseau also declared he hoped for interstate bus legislation fair to the public operators and rail lines that would promote a service in the public's interest.

Technical discussions of six-wheel vehicles rolled heavily over today's program. The interest displayed as compared with the brief consideration accorded the subject at last year's meeting in Newark, was an excellent measure of six wheels growth. Four papers were presented by engineers covering six-wheel development structure, tire performance and four-wheel drives. The discussions revealed numerous grounds for debate which remain. At yesterday's session Frank Fageol predicted the abandonment of double-deck bus operations because of the advent of the so-called 40-passenger type of urban motor coach.

Fruehauf Acquires Warner

DETROIT, Nov. 13—The Fruehauf Trailer Co., through its president, Harvey C. Fruehauf, has announced acquisition of the control of the Warner Co. of Beloit, Wis. The Warner Co., which is one of the oldest trailer makers in the country, will continue to operate as an independent unit with the same management and sales personnel. Headquarters of the Warner Co., however, will be moved to Detroit at once.

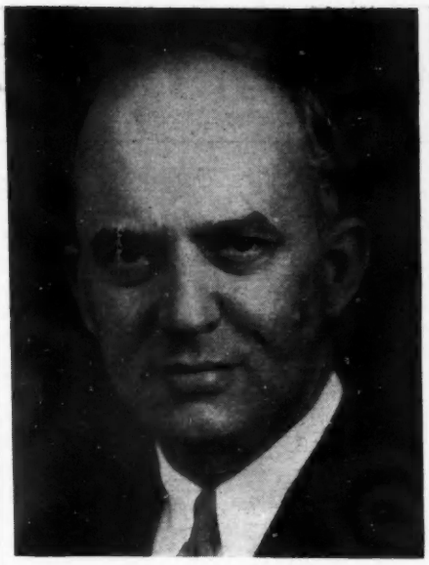
American Austin Appoints C. A. Best

DETROIT, Nov. 12—A. J. Brandt, president of the American Austin Co., maker of the Austin car at factories in Butler, Pa., has announced the appointment of C. A. Best as general sales manager of the company. Executive headquarters have been established at Detroit.

Mr. Best is widely known in the automotive industry, as the result of 18 years' connection with the sales and service ends of the business. He entered the shops in Providence, R. I., in 1911, to gain mechanical experience and at the same time studied electrical engineering. His first training as a retail salesman was with the old Providence Motor Car Co., handling Stoddard-Dayton and Maxwell cars. Shortly after the passing of the Stoddard-Dayton, Mr. Best moved to Ohio where he worked as a service manager, then as a retail sales manager and finally going in business for himself as an automobile retail dealer.

After about five years of operating his own business, he joined the Willys-Overland, becoming a special representative of the Buffalo branch. A short time later, he was transferred to the Milwaukee branch as sales promotion manager. At Milwaukee he became successively a wholesale sales manager and assistant branch manager. Then he was transferred to Detroit as assistant branch manager and then to Dallas as manager of the Texas branch.

Early in 1928 he returned to Detroit as manager of the Detroit branch and as district sales manager of the zone, a position that he has just resigned to take up his new work as general sales manager for the American Austin Co.



C. A. Best

who has been appointed general sales manager of the American Austin Car Co.

Optimism is Keynote at N. S. P. A. Convention

DETROIT, Nov. 13—With a total registration of approximately 7000 the National Standard Parts Association opened its annual convention at Detroit on November 11. In addition to the development and improvement of old parts and equipment many new items were exhibited.

"Markets of Today and Tomorrow" was the subject of President McIlroy's address at the first formal session on November 12, in which he pointed out that the parts and equipment business was enjoying its greatest year. His note of optimism when speaking of the future was also noticed at the Old Timers' Dinner held on Sunday evening and of which L. T. White, past-president of the association, acted as chairman.

Judson Supports the Industry

DETROIT, Nov. 12—That there is no reason for the present uneasiness or apprehension regarding the condition of the automotive industry is shown by a statement widely circulated by R. W. Judson, president of the Continental Motors Corp. Mr. Judson points out that the automobile companies of the country today have a cash balance of $677,189,218, with a funded indebtedness of only $71,639,700.

G. M. Declares Extra

NEW YORK, Nov. 14—Directors of the General Motors Corp., meeting here this afternoon, declared an extra dividend of 30 cents on the common stock, in addition to the regular dividend of 75 cents per share. Both dividends are payable Jan. 3 to stockholders of record Nov. 23. The quarterly preferred dividend was declared payable Feb. 3 to stockholders of record Jan. 6.

Motor Stocks Sag to Lower Levels

NEW YORK, Nov. 13—Motor stocks listed on the Stock Exchange have dropped an average of about 10½ points since Nov. 2, and an average of nearly 75 points under the 1929 highs.

Company	1929 High	Nov. 13 Close	Nov. 2 Close	Net Drop	1929 Drop
Auburn	514	130¼	180	49¾	383¾
Chrysler	135	27	35	8	108
Gen. Mtrs.	91⅜	36⅛	49¾	13⅝	55⅝
Hudson	93½	38	51¾	13¾	55½
Hupp	82	18⅛	24	5⅞	63⅞
Mack	114¾	58¾	75¾	17	56
Marmon	104	21½	25⅝	3⅞	82½
Nash	118⅞	45⅛	54⅞	9¾	73¾
Packard	32½	13½	19½	6	19
Peerless	22½	5½	9	3½	17
Reo	31⅞	10⅜	12½	2⅛	21½
Stdbkr.	98	39	46⅞	7⅞	59
White	53½	30	34⅞	4⅞	23½
Willys-Ovl.	35	8⅛	11	2⅞	26⅞

Templin Joins Dodge Bros.

DETROIT, Nov. 14—E. W. Templin, formerly chief engineer of the Six Wheel Corp., Philadelphia, and recently manager of motor equipment for the Mavis Bottling Co., New York, has been appointed to take charge of interplant transportation of the Dodge Bros. division of Chrysler Corp.

Finance Companies to Meet

CHICAGO, Nov. 14—The sixth annual meeting and financing conference of the National Association of Finance Companies will be held in the Congress Hotel here on Nov. 19 and 20.

Financial Notes

Company	Announces	Amount	Remarks
Muskegon Motor Specialties.	extra div.	50 cts.—B	Dec. 1 record Nov. 19
	reg. div.	50 cts.—A	
Raybestos-Manhattan, Inc. .	earnings 3rd quar.	$1,610,390	$1.49 per share
	9 mos. earnings	$3,108,919	$4.60 per share
Hayes Body Corp.	profit bef. tax 3 quar.	$71,516	1928 period $25,467
Trico Products Co.	earnings 3rd quarter	$564,557	period 1928 $499.401
	earnings 9 mos.	$1,813,084	period 1928 $1,485,591
Durant Motors (Calif.)	Common div. 3rd quar.	20 cts.	
Timken Roller Bearing	9 mos. earnings	$12,172,987	
	earnings 3rd quar.	$3,731,679	
Ainsworth Mfg. Co.	Net profit 9 mos.	$991,030	$6.23 per share
	reg. quar. div.	62½ cts.	Dec. 2 record Nov. 20
Thompson Products	earnings 9 mos.	$1,138,263	1928 period $803.738
Marlin-Rockwell Corp.	earnings 9 mos.	$1,991,117	1928 period $1,404,035
Studebaker Corp.	reg. quar. div.	$1.25 com. $1.75 pref.	Dec. 2 record Nov. 9
Stewart-Warner Corp.	earnings 3rd quar.	$1,897,908	$1.52 per share
Budd Wheel Co.	net profit 9 mos.	$1,601,626	$7.10 per share
Goodyear Tire and Rubber..	earnings 9 mos.	$18,425,000	
Gabriel Snubber	loss, 3rd quar.	$31,252	1928 period $57,076 income
Borg-Warner	net inc. 9 mos.	$6,401,358	
B. F. Goodrich	reg. quar. div.	$1 com., $1.75 pref.	Dec. 2 record Nov. 18
			Jan. 2 record Dec. 10
Timken-Detroit Axle	reg. quar. div.	$1.75 pref.	Dec. 1 record Nov. 20

Men of the Industry and What They Are Doing

Mott Rescues Bank

Charles S. Mott, vice-president of the General Motors Corp., and president of the Union Industrial Bank, Flint, Mich., has personally guaranteed the sum of $1,500,000 to help the bank through a critical period brought on by embezzlement of bank funds to cover stock-market losses by employees.

Mattimore Rejoins MacManus

W. J. Mattimore, for seven years director of advertising of the Chrysler Corp. and its earlier companies, last week rejoined the Detroit organization of MacManus, Inc., advertising agency. Mr. Mattimore first became associated with Theodore F. MacManus, head of the company bearing his name, nearly a score of years ago. This association continued until 1921, when the former left to become advertising manager of the reorganized Maxwell Motor Corp., merged with Chrysler in 1925.

Froesch to Handle Service

E. V. Rickenbacker, vice-president of Fokker Aircraft Corp. of America, in charge of sales, has appointed Charles Froesch as general service manager. Mr. Froesch has been on the engineering staff of the Fokker company for about a year and a half, having joined in the capacity of project engineer. Later he became assistant chief engineer and in March of this year was placed in charge of sales engineering.

Allied Appoints Muffly

William R. Wilson, chairman of the board of Allied Motor Industries, Inc., and of Copeland Products, Inc., announces that Glenn Muffly, consulting engineer for Copeland Products, Inc., has been appointed to the executive staff of American Cirrus Engines, Inc., a unit of Allied Motor Industries, Inc.

Sheyffert Joins Ford

M. T. Sheyffert, formerly with Willys-Overland, Toronto, has been appointed service manager of the Ford Motor Co. branch at Singapore, Straits Settlements. He will sail from San Francisco Dec. 13, and is scheduled to arrive in Singapore Jan. 20.

Raskob Heads Bank Board

John J. Raskob has been elected temporary chairman of the board of the County Trust Co., New York bank, following the death of the president, James J. Riordan. Mr. Raskob had been a director of the institution for some time.

Deeds Plans New Yacht

A palatial yacht, equipped with a pipe organ and an airplane, for commuting from the cool Atlantic shore to Wall Street, is being constructed for Colonel Edward A. Deeds, National City Bank director and aviation enthusiast.

Colonel Deeds, who is also chairman of the boards of directors of the Pratt & Whitney Aircraft Company and the Niles-Bement-Pond Company, has always been keenly interested in the practical advantages of flying, and was one of the first business men to adopt the plane as a standard method of travel.

Sail for Europe

Hal L. Purdy (right), Marmon vice-president, sailed on the Ile de France last week for a European business trip. He was accompanied by Dr. William H. Mencher, a friend

Carter of Oldsmobile Announces Appointments

J. J. Carter, factory manager of the Oldsmobile Motor Car Co., has announced the following promotions in the organization: Frank King to the position of general superintendent of the six-cylinder motor plant, eight-cylinder plant, and axle plant; Roy Fishel has been appointed superintendent of the six-cylinder motor plant; John Scott to the position of superintendent of the eight-cylinder motor plant; Raymond Reilly becomes superintendent of the axle plant; A. H. Brandel has been appointed general superintendent of assembly, paint, wheel and sheet metal finishing depts.

Leo Smith will continue as superintendent of the paint dept. Michael Minno, formerly in charge of chassis assembly, to the position of superintendent of assembly of both six and eight lines.

Rigby Gets A.B.C. Appointment

M. F. Rigby, advertising manager of The Studebaker Corp. of America, has been named director of the advertising division of the Audit Bureau of Circulations.

Martin Returns to Europe

W. W. Martin, director general, and George A. Madole of the French B. F. Goodrich Co., sailed Nov. 8 on the Ile de France. Mrs. Martin and son accompanied Mr. Martin.

Cowlin is Promoted

E. D. Cowlin, formerly New York manager of the Reliance Manufacturing Co., manufacturers of spring washers and cold drawn alloy steel, at Massillon and Mansfield, Ohio, has been appointed general sales manager of the company and will make his home at the main offices at Massillon, Ohio, about Jan. 1.

Executives Return to U. S.

Alfred H. Swayne, vice-president of General Motors Corp., returned Nov. 12 aboard the S. S. Majestic, from a trip of several weeks in Europe. W. O. Kennington of the president's staff of General Motors Export Division also arrived on the Majestic for a visit to the home office. Also A. T. Murray, president of American Bosch Magneto Corp., arrived on the Bremen accompanied by Mrs. Murray.

Independent Promotes Two

Joseph P. Fletcher, manager of the company's Buffalo office, has been appointed manager of the Philadelphia office of the Independent Pneumatic Tool Co., Chicago, to succeed the late Mr. A. L. Schuhl. W. O. Becker, who has been working out of the Toronto office, has been named as manager of the Buffalo office to succeed Mr. Fletcher.

Houdaille Appoints Foy

George V. Foy has been appointed vice-president of the Houdaille-Hershey Corp. Previously, Mr. Foy was assistant to Claire L. Barnes, president. Prior to joining the Houdaille corporation he was a newspaper financial writer.

Marmon Appoints Gemmer

S. E. Gemmer has been appointed Marmon-Roosevelt district representative in the New England territory, according to an announcement by Thomas E. Jarrard, general sales director of the Marmon Motor Car Co.

Jordan Presides at Ad Session

Edward S. Jordan, chairman of the advertising committee of the N.A.C.C., presided at a recent session in Cleveland, where merchandising plans for the national automobile shows were discussed.

Johnson Returns to Washington

Pyke Johnson, executive secretary of the Highway Education Board, has returned to Washington after attending the second Panama-American Congress of Highways.

Tyler Gets Sales Post

W. H. Tyler has been appointed manager of dealers' tire sales division of the Seiberling Tire Company of Canada, with headquarters in Toronto.

Emphasis is Placed on Sales Outlook

(Continued from page 734)

announced by a number of factories indicate a considerable recession from the October program.

A number of leaders have recently added to the statements published in *Automotive Industries* on the consequences to the industry of the recent stock-market decline. Their statements are reproduced herewith.

Alvan Macauley, president of the Packard Motor Car Co. and the National Automobile Chamber of Commerce, said: "No shakeup in the stock market can more than temporarily hold up the onward march of the motor car. It would be foolish to say that the recent events in the market will not affect us. They have affected us, just as all business has always responded to periods of inflation and depression.

"But there has always been one peculiarity about the motor car business. It has always inflated ahead of any inflation period and it has never declined in proportion with other businesses in periods of depression. I am confident that it will be so this time.

"It is my thought that we shall have a quiet period until the first of the year, at the time of the opening of the various shows, when the interest and stimulation that have always attended shows will start our business again on its upward march to still greater things."

E. T. Strong, president and general manager of the Buick Motor Co., in an interview granted recently said that economic conditions point to an unusually bright future for the automotive industry. "There is every indication, in general economic conditions throughout the country, that the coming months will show a reasonably high degree of prosperity. The need for automobile transportation continues to grow—and the product itself is finer than ever before."

Richard H. Scott, president, Reo Motor Car Company, stated in an interview: "Industry is now experiencing the effects of recent conditions in the stock market. While this situation is a bit uncomfortable at present, it is my opinion that everyone will be better off in the long run and that business will be conducted in a healthier and saner manner than heretofore. Less time will be spent in watching the ticker and more in application to business."

Senate Amends Tariff Schedule on Automobiles

WASHINGTON, Nov. 11—Without a record vote, the Senate, on Friday of last week, sustained the action of its Finance Committee in reducing the rate on automobiles, motorcycles, light buses, chassis and bodies and parts, except tires, to 10 per cent from 25 per cent, the present rate and the rate proposed in the House bill respectively. The Senate also knocked out the retaliatory provision of the existing law and which the House measure would continue. This provision calls for the assessment of a duty, not to exceed 50 per cent, on imports of motor vehicles equal to the rates imposed by the countries of origin on American motor vehicles, when such duties exceed the American duty.

The Senate amendment divided the motor vehicle paragraph so as to impose a duty of 25 per cent on automobile trucks valued at $1,000 each or more; automobile truck and motor bus chassis valued at $750 or more each; motor buses designed to carry more than 10 persons and bodies for such buses, whether finished or unfinished.

Advertising Man Praises Chrysler Corp. Action

NEW YORK, Nov. 11—The publicly owned corporations of the country should leave no doubt in the minds of investors as to the state of their business or that of their industries and should adopt extraordinary methods to restore calm through advertising. This is the assertion of Russell Law, president of Rudolph Guenther-Russell Law, Inc., national financial advertising agency.

An outstanding example was cited by Mr. Law in the publication on October 26 of a page advertisement of the Chrysler Corp. in the newspapers, setting forth the financial condition of the corporation.

Zeppelin Ring Laid

AKRON, Nov. 11—The riveting of a gold spike into the huge central supporting ring of the Goodyear-Zeppelin ZRS4, by Rear Admiral William A. Moffett, chief of the Naval Bureau of Aeronautics, marked the official beginning of the construction of the world's largest airship. The ceremony, which took place Nov. 7, was witnessed by more than 60,000 persons.

Announce New Rules for Whitworth Race

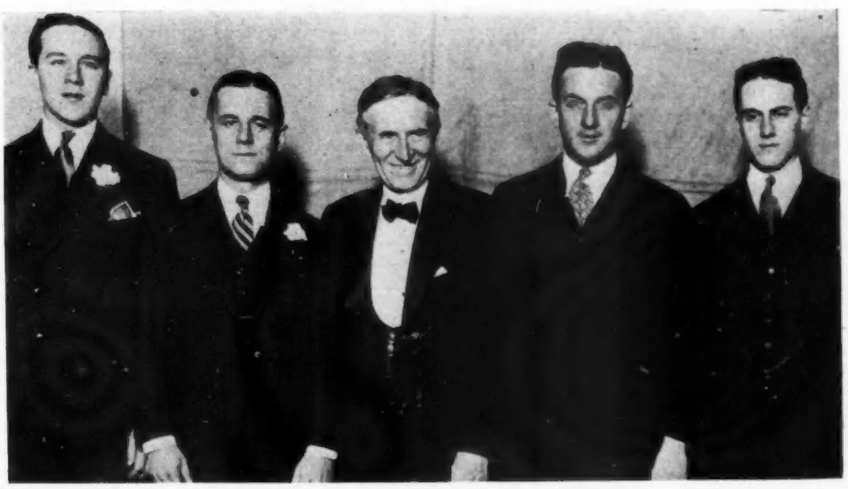
PARIS, Oct. 19 (*Special*)—Changes in the rules of the annual Rudge-Whitworth Cup 24-hour race, to be held at Le Mans on June 21 and 22 next, cover the following points: Hoods will not be required; Ethyl gas can be used if desired; the two men appointed to drive the car will be allowed to work on it together at the pits only, the car, as heretofore, to be occupied by one man; entries will be received from private owners.

This race was won last year by Bentley, with Stutz and Chrysler cars qualifying for the final. While nominally open to standard cars, carrying full equipment, various changes are allowed, among them being bigger valves, special timing and special gear ratio. One of the conditions is that all cars must be guaranteed to be catalogued and available to the public. Two seater bodies are admitted up to 1000 cc. (61 cu. in.) piston displacement, and above this all cars must have four seater bodies. Up to 1000 cc. ballast weighing 132 lb. must be carried. From 1501 to 3000 cc. (92 to 183 cu. in.) the ballast must be 264 lb., and above this piston displacement it is 396 lb.

Crude Rubber Active

NEW YORK, Nov. 11—Substantial factory interest appearing late in the week resulted in active trading in crude rubber and in slightly higher prices, according to F. R. Henderson Corp. This followed a period earlier in the week when prices reached a level almost equal to the record low in the history of the Rubber Exchange. The slump in prices was due to heavy speculative liquidation abroad, heavy shipments from the East and irregularity in the stock market, in the opinion of the Henderson company. This company looks for little prospect of higher prices.

Harvey S. Firestone, Sr., and His Four Sons



When Harvey S. Firestone, Jr., sailed last week on a European business trip, his father and three brothers were present to bid him good-bye. The members of the party are, left to right, Leonard K., Harvey S., Jr., Mr. Firestone, Russell H. and Raymond C. Firestone

Machinery and Equipment Representatives Affirm Soundness of Automobile Industry

WASHINGTON, Nov. 13—Slackening of the automotive industry has brought about a slight let-up in some lines of machine tools, it was declared at the fourth conference of representatives of machinery and equipment trade, but conditions in the industry were declared to be fundamentally sound. The break in the stock market, reflected in the automotive as well as other industries, was viewed by the conference as a serious matter, but it was not considered to be a cause for pessimism.

It was conceded that consumer purchasing power has been reduced and that there might be further curtailment in industrial activities, more accentuated in some lines than in others. It was declared that inflated stock values for some time have indicated that they would decline sharply and that to the extent they assumed normal levels a healthy condition has developed. Moreover, it was pointed out that the drop in money rates would aid the foreign situation by encouraging loans abroad to be used in the purchase of American products.

It was also believed that stimulation would be given to highway and building construction and that this would be a factor in taking up unemployment that might otherwise exist. There were instances cited of increased buying of equipment in October with the maintenance of good purchasing during the current month, though a number of lines reported a tapering off which has continued since September. It was indicated that aircraft production was showing a substantial falling off.

The conference, acting individually, endorsed the report of the Merchants Association of New York which urged repeal of the Senate amendment in the tariff bill unconditionally prohibiting American trade-marked imports. Restoration of the present provision in the Fordney-McCumber tariff law, continued in the House bill, was favored by the association. The existing act makes it unlawful to import merchandise of foreign manufacture if it bears a trade mark owned by a citizen, corporation or association of the United States, unless the written consent of the owner of the trade mark is produced. The Senate bill struck out the consent provision. It also added a provision prohibiting the importation of foreign-made merchandise if it bears a patent notice of the United States.

The provision in the Senate bill, urged by representatives of the American Federation of Labor, are understood to have been directed partially at American automotive manufacturers and others with plants abroad to prevent the production at so-called cheap labor costs abroad and the importation of their goods into the United States. This movement, however, was declared to be small.

The Ford Motor Co. reported that it did not contemplate importation of its products made abroad. On the whole, it was stated, American branches were established in foreign countries for the purpose of competing more satisfactorily in markets which could not be entered or held from factories in the United States. Some of these foreign branches, it was stated, use American-made products, accessories, etc., so that they are often an outlet for American-made products rather than a competitor with them in the United States.

Further Tests Planned for Automatic Pilot

WASHINGTON, Nov. 11—Further tests will be conducted with a view to perfecting a gyroscopic automatic pilot which recently guided a transport airplane from Dayton, Ohio, to Bolling Field, Washington, D. C., it was stated at the War Department Nov. 7.

The principle of the apparatus is sound, it was stated, but additional experiments will be made before any move is made to adopt the control as standard equipment on Army planes.

Fisk Announces New Tire

CHICOPEE FALLS, MASS., Nov. 14—The perfection of a new principle of automobile tire design known as the Fisk Air-Flight Principle was announced here today by H. T. Dunn, president of the Fisk Tire Co., Inc. "This is the first progressive step in tire-building since the development of the balloon tire," Mr. Dunn said. "The Air-Flight Principle, in brief, means that the air in the tire carries the load of the automobile and transmits the power of the engine to the road to a much greater extent than in balloon or high-pressure tires."

Plane Fire Prevention Studied

WASHINGTON, Nov. 11—A contest for the development of fire prevention equipment for airplanes is being held by the French committee on aeronautical propaganda in collaboration with the minister of air and the aviation section of the aero club of France, according to a report received in the Department of Commerce, Nov. 7, from W. L. Finger, Automotive Trade Commissioner to Europe.

New Era Appoints Distributor

CHICAGO, Nov. 12—Harry P. Branstetter, Chicago's first Ford dealer and one of the pioneers of automobile row, has been appointed distributor for the Ruxton front-wheel drive automobile in the northern Illinois, eastern Iowa, and northern Indiana territory. His appointment is the first granted in a major city by New Era Motors, Inc.

Austin Will Visit New York Show

N.A.C.C. Announces Names of Other Foreign Representatives Expected

NEW YORK, Nov. 12—Foreign automotive executives have evinced their interest in the coming national shows by accepting invitations to attend International Day, which is to be held Jan. 6, 1930, according to the National Automobile Chamber of Commerce.

Sir Herbert Austin will represent the British industry; Conn. Avv. Guido Faldella, president of the National Fascist Automobile Trade Board, will represent Italy, and G. A. Viriot of the Automobile Club de L'Ouest, will represent France.

Chairmen and officers of 20 motor companies are on the committee of welcome and a large staff of technical men from American factories will also be present on that day prepared to discuss all phases of manufacture and sales. It is expected that approximately 40 nations will be represented.

Among the members of the committee of welcome are: Alvan Macauley, president of the Chamber and president of Packard; John N. Willys, chairman of the Export Committee and chairman of Willys-Overland; Alfred P. Sloan, Jr., president of General Motors Corp.; Roy D. Chapin, chairman of the Highways Committee and chairman of Hudson; Charles D. Hastings, chairman of the Show Committee and chairman of the Hupp Motor Car Corp.; A. J. Brosseau, chairman of the Motor Truck Committee and president of Mack Trucks, Inc.; Edsel Ford, president of Lincoln; A. R. Erskine, president of Studebaker; Walter P. Chrysler, C. W. Nash, Edward S. Jordan, E. L. Cord, R. E. Olds, and Robert C. Graham of Graham-Paige, are likewise on the committee, as well as Alfred H. Swayne and H. H. Rice of General Motors Corp. and William E. Metzger of the Federal Motor Truck Co.

Producing Synthetic Gasoline

BERLIN, Nov. 8—According to an announcement of the German dye trust (I. G. Farbenindustrie Aktiengesellschaft), it is at present producing synthetic gasoline in its Leuna Works at the rate of about 80,000 gal. per day. Most of this gasoline has iron pentacarbonyl added to it to make it non-detonating, and in this treated form is sold under the trade name Motalin.

Plans New Air Service

NEW YORK, Nov. 11—A daily passenger plane service between New York and Los Angeles will be started early next year and will be operated by Universal Aviation Corp. and Western Air Express, Graham B. Grosvenor, president of Aviation Corp., of which Universal is a subsidiary, announced yesterday.

Cut Free Service, Tire Men Are Told

Increases Overhead to Undue Limits, Convention Speakers Say

CHICAGO, Nov. 13—That dealers generally are giving too much service, that the public, from getting such service, learns to expect it, and that the tire business as a result is operating under hardships which should not exist, seemed the consensus of opinion among virtually all the speakers at the annual convention of the National Tire Dealers' Association, Inc., which is being held here this week.

Most speakers declared, however, that while the dealer's margin of profit is gradually narrowing by naturally increased overhead, some of which he has undoubtedly imposed on himself, there still exists in the organization a disposition to continue giving the public a maximum of service and value of product.

Discussion of the service phase of the merchandising problem indicated that some action might be taken by the association's officers and committees, following the convention, toward a service curtailment program upon which universal agreement could be obtained. This plan, it was said, would probably necessitate the formulation of a schedule which would designate the type of service that could be expected free, and other types for which a service charge would be made.

Between 500 and 600 tire dealers from all parts of the United States were in attendance at the convention, while some 80 tire and accessory manufacturers were represented by exhibits.

Applied Mechanics Meeting Planned for Stockholm

STOCKHOLM, Nov. 1—In accordance with a decision made at the last International Congress for Applied Mechanics, held at Zurich, Switzerland, in 1926, the next congress will be held at the Royal Technical College in this city Aug. 25-29, 1930. The languages of the congress are English, French, German and Italian.

There will be three sessions which will deal respectively with hydrodynamics and aerodynamics, the theory of elasticity and strength of materials, and rational mechanics, particularly problems of vibration in connection with ships and vehicles. Forty-five minutes will be allowed for the presentation of papers on any particular subject, and from 15 to 20 minutes for the reading of a report on the general topic.

Those desiring to contribute papers should communicate with Prof. W. Weibull, general secretary, Third International Congress for Applied Mechanics, Kgl. Tecniska Hogskolan, Valhallavagen, Stockholm, Sweden. The membership fee for the congress is 10 Swedish crowns.

Foreign Trade Possibilities for Airplanes Scarcely Developed, Says Major Howard

WASHINGTON, Nov. 11—Aeronautical manufacturers in the United States have not scratched the surface of foreign trade possibilities, according to Maj. E. P. Howard, chief of the division of regulation and licensing, Aeronautics Branch, Department of Commerce, in an address delivered Nov. 8 before New England Export Club delegates and other business executives of New England at the Department of Commerce.

Exports of aircraft engines, parts and aircraft for the first six months of 1929 were 41 per cent more than the exports for the full year of 1928, he stated, and 1928 exports nearly equaled the combined values of exports for the previous three years.

The United States is especially fitted to supply the world market for airplanes, engines and airplane supplies because of its diversified uses of airplanes, the wide range of daily aircraft operations, and the comparatively large domestic market, he said. The address in part follows:

Exports of the three aeronautic items —aircraft, engines and parts—during the first half of 1929 exceeded the aggregate for the full year of 1928 by more than 41 per cent. Exports for 1928, moreover, almost equaled the combined values of exports for the previous three calendar years.

As yet, however, American aeronautic manufacturers have not even scratched the surface of their foreign trade possibilities. Because of the diversified uses to which airplanes are being put in the United States daily, because our 91,000 miles of scheduled daily operations are being flown over a wide range of temperature and altitude, because we have a comparatively large domestic market for aircraft which assures the economies of mass production and advanced engineering, the United States is peculiarly fitted to supply the world market for airplanes, airplane engines, and airplane supplies in much the same way that we now supply most of the world's automobiles.

"But how is the aeronautics branch aiding in increasing our aircraft exports?" you may ask. It is aiding in a number of ways; by cooperating with the aeronautics trade division of the Bureau of Foreign and Domestic Commerce, which in turn cooperates constantly with all aircraft exporters, and by engaging in a host of other specific activities which are helping to reduce the problems of air transportation to terms of business, industry and commerce.

Each of the 19 primary functions and activities of the aeronautics branch is an indirect aid to the industry's foreign trade.

Chevrolet Production Broke October Record

DETROIT, Nov. 14—All October production records in the history of the Chevrolet Motor Co. were broken last month with an output of 85,915 cars and trucks, it was announced at the central offices here today. Compared with the output of 65,052 units for October of last year, the 1929 October manufacturing volume shows a gain of more than 20,000 units. It indicates an increase of more than 900 cars and trucks a day over the showing for the corresponding month of a year ago.

Chevrolet's record October performance brings output up to 1,275,778 units as of Nov. 1. This is more cars than Chevrolet has ever built in an entire year and is nearly five times the number of any other six-cylinder car built in an entire year, according to Chevrolet officials.

Richfield Announces Reversible Propeller

SAN FRANCISCO, Nov. 11—Development of a reversible airplane propeller, tending to prevent nosing over in landing and to eliminate ground loops, has been announced by the Richfield Oil Co.

The new propeller weighs 30 lb. more than standard types, but the announcement says permits a 30 per cent faster climb, 30 per cent more cruising speed and consumes approximately 20 per cent less gasoline.

William C. Anderson

DETROIT, Nov. 11—William C. Anderson, founder of the Anderson Carriage Co. and the Anderson Electric Car Co., which eventually developed into the Detroit Electric Car Co., died Saturday night in his home on Lake Shore Drive, near Mt. Clemens, of an illness that attacked him a year ago. He was 76 years old.

Born in Ontario, Anderson was taken to Port Huron by his parents while still a young boy, and came to Detroit to live in 1895. His activities in the carriage business, which assumed considerable proportions about 20 years ago, made him one of the leading business men of the city.

Britain Out of Air Classic

LONDON, Nov. 9—The British Air Ministry announced that no further entries for the Schneider cup race will be made by the Royal Air Force, the reasons given being that government participation in the contest has given it a character which was not intended by the founder, the late Jacques Schneider, and that sufficient data for the development of highspeed aircraft have now been collected.

Announce National Equipment Exhibits

M.&E.A. Lists 100 Manufacturers to Display at Automobile Shows

NEW YORK, Nov. 12 — Approximately 100 manufacturers of parts, accessories and equipment will be represented at the national shows to be held in New York and Chicago this coming year. Members of the Motor & Equipment Association have already been assigned space in these shows. Over 40 shop equipment manufacturers will be represented in that section of the exhibit which is to occupy the fourth floor of Grand Central Palace in New York and the North Hall gallery of the Coliseum in Chicago.

Pursuant to the program inaugurated last year, the equipment sections will be closed to the public until 5 p. m. every day to allow manufacturers' representatives and assisting jobbers' representatives to demonstrate the machinery and tools to the trade.

Approximately 60 members who manufacture parts and accessories will exhibit in these shows, occupying the third and part of the fourth floors in New York and the main gallery and south hall in Chicago.

Members of the association who will exhibit are listed as follows:

AC Spark Plug Co., Aluminum Co. of America, American Automatic Devices Co., American Chain Co., Inc., Appleton Electric Co., Arrow Head Steel Products Co., Bendix Aviation Corp., Bohn Aluminum & Brass Corp., Bragg-Kliesrath Corp., Edward G. Budd Mfg. Co., Budd Wheel Co., Burgess Battery Co., Burgess-Norton Mfg. Co., Continental Motors Corp., Craveroiler Co. of America, Dardelot Threadlock Corp., The Dole Vale Co., The Fulton Co., Gabriel Snubber Mfg. Co., Gemmer Mfg. Co., General Electric Co., Hercules Motors Corp., John C. Hoof Co., Houdaille-Hershey Corp., Imperial Brass Mfg. Co., K-W Ignition Corp., Kant-Rust Products Corp., King Quality Products Co., Landis Engineering & Mfg. Co., Lorraine Corp., Lycoming Mfg. Co. Lyons Cover Co.

McQuay-Norris Mfg. Co., Moto Meter Gauge & Equipment Co., Motor Improvements, Inc., National Carbon Co., Inc., Noblitt Sparks Industries, Inc., Packard Electric Co., Pines Winterfront Co., Wm. E. Pratt Mfg. Co., Pyrene Mfg. Co., Raybestos Division of Raybestos-Manhattan, Inc., Ross Gear & Tool Co., A. Schrader's Son, Inc., Simoniz Co., Stewart Warner Corp., Thompson Products, Inc., Titeflex Hose Co., Tonneau Shield Co., Inc., Unity Mfg. Co., Waukesha Motor Co., Wellston Mfg. Co., Whitaker Battery Supply Co., Inc., Wolverine Bumper & Specialty Co., Wyman-Gordon Co. and "X" Laboratories.

Shop Equipment: Albertson & Co., Inc., Allen Electric & Equipment Co., Automotive Maintenance Machinery Co., Bastian-Blessing Co., Battery Equipment & Supply Co., John Bean Mfg. Co., Black & Decker Mfg. Co., Brunner Mfg. Co., Burton & Rogers Mfg. Co., Champion Pneumatic Machinery Co., Curtis Pneumatic Machinery Co., Elite Mfg. Co., Federal Mogul Corp., Hall Mfg. Co., Hardie Mfg. Co., Hayes Pump & Planter Co., Ernest Holmes Co., Hutto Engineering Co., Inc., Kellogg Mfg. Co., Manley Mfg. Co., Manufacturers' Auto Equipment Co., Marquette Mfg. Co., Mayo Co., National-Standard Co., Raybestos Divison of Raybestos-Manhattan, Inc., Rogers Products Co., Inc., Romort Mfg. Co., Scully Steel & Iron Co., Service Station Equipment Co., South Bend Lathe Works, Spraco, Inc., L. S. Starret Co., U. S. Air Compressor Co., Van Dorn Electric Tool Co., Van Norman Machine Tool Co., Walker Mfg. Co., Weaver Mfg. Co. and Joseph Weidenhoff, Inc.

British Plan Trial for New Speed Mark

LONDON, Oct. 26—Not content with the world speed record of 357.7 m.p.h., the British Air Ministry has decided to begin further experiments at the Calshot airdrome in the hope of pushing the record to 400 miles an hour or more.

Permission has been granted to Squadron Leader Augustus H. Orlebar, present record holder, and Flight Lieutenant George Stainforth to return to Calshot for mechanical tests of the Supermarine S-6 and the Gloster-Napier-6 seaplanes. The plans are to attach smaller wings to the planes, use smaller pontoons and provide for carrying a smaller amount of fuel than in last month's speed trials.

Fire Apparatus Announced by American-LaFrance Co.

ELMIRA, N. Y., Nov. 14—Announcement of new "Master Series" motor fire apparatus is made by the American-LaFrance & Foamite Corp., consisting of a complete new line of vehicles, featuring two pumping engines known as the "Metropolitan" and "75," a new city service truck and a complete line of aerial trucks. Production on all the new models is now under way.

Among the general improvements in the line leaders are: Left-hand drive instead of right-hand, allowing greater visibility and ease of handling in traffic; new nut and screw steering gear, giving ease of steering comparable to that enjoyed by the finest pleasure cars; new pressed steel, heat treated frames having 46 per cent more bending stress than the conventional type frame; specially developed mechanical four-wheel brakes, fully inclosed of the two-shoe type; greater flexibility in springs which are longer and stronger than those formerly used, and hollow spoke cast steel wheels, capable of standing a side thrust of 30,000 lb., compared with a side thrust resistance of 18,000 lb. for wood wheels.

AC Sales Increase

DETROIT, Nov. 12—Replacement sales through AC distributors, according to W. S. Isherwood, sales manager of the AC Spark Plug Co., show that the 1929 sales increase over 1928 is 108 per cent greater than the huge increase of 1928 over 1927. The monthly increase of spark plugs was from 150,000 to 1,250,000.

G.M. Corp. Reports Dealer Deliveries

October Figures Show Slight Decrease From Last Year

NEW YORK, Nov. 14—During the month of October General Motors dealers delivered to consumers 139,319 cars, according to an announcement by Alfred P. Sloan, Jr., president. This compares with 140,883 for the corresponding month a year ago. Sales by General Motors manufacturing divisions to dealers amounted to 122,104 cars, as compared with 120,876 for the corresponding month last year.

The following tabulation shows monthly sales of General Motors cars by dealers to ultimate consumers and sales by the manufacturing divisions of General Motors to their dealers:

Dealers' Sales to Users

	1929	1928	1927
Jan.	104,488	107,278	81,010
Feb.	138,570	132,029	102,025
Mar.	205,118	183,706	146,275
Apr.	223,303	209,367	180,106
May	214,870	224,094	171,364
June	194,705	206,259	159,701
July	181,851	177,728	134,749
Aug.	173,884	187,463	158,619
Sept.	145,171	148,784	132,596
Oct.	139,319	140,883	153,833

Divisions' Sales to Dealers

	1929	1928	1927
Jan.	127,580	125,181	99,367
Feb.	175,148	169,232	124,426
Mar.	220,391	197,821	161,910
Apr.	227,718	197,597	169,067
May	220,277	207,325	173,182
June	200,754	186,160	155,525
July	189,428	169,473	136,909
Aug.	168,185	186,653	155,604
Sept.	146,483	167,460	140,607
Oct.	122,104	120,876	128,459

These figures include Chevrolet, Pontiac, Oldsmobile, Marquette, Oakland, Viking, Buick, LaSalle and Cadillac passenger cars and trucks sold in the United States, Dominion of Canada and overseas.

Plans Giant Seaplane

BERLIN, Oct. 26 — Dr. Edmund Rumpler intends to visit America in December or January to form a German-American company for the construction of a giant seaplane, which is planned to carry 170 passengers across the Atlantic in twenty hours.

Autocar Adds Branches

PHILADELPHIA, Nov. 12 — The Autocar Co., Ardmore, Pa., has announced the opening of two new factory branches, located at Hartford and Bridgeport, Conn. The new branches will be under the management of the New Haven district manager's office.

To Build Seadrome Soon

NEW YORK, Nov. 11—Work will be started soon on the first floating landing field for use on ocean airways. It is the invention of Edward H. Armstrong, head of the Armstrong Seadrome Development Corp.

Young Reorganizes Aeronautics Branch

Licensing and Development Chief Activities Under New Plan

WASHINGTON, Nov. 11—A reorganization of the aeronautics branch of the Department of Commerce, dividing between two newly appointed officials the duties formerly performed by the director of aeronautics, was announced today by Clarence M. Young, assistant secretary of commerce.

The aeronautics branch has been classified into two main groups, the first being the licensing and inspection service and the second the aeronautic development service. Assistant Secretary Young announced the appointment of Gilbert G. Budwig in charge of the former and Harry H. Blee in charge of the latter service. Both officials have previously had charge of a division with the same duties. F. C. Hingsberg, it was announced, will remain in charge of the airways division, which is a unit of the Bureau of Lighthouses.

Engineering Congress Concludes Tokio Meeting

TOKIO, Nov. 7—Eight hundred engineering papers, of which American contributions formed the largest division, were read before the World Engineering Congress which closed here today. A sectional meeting of the World Power Congress which was held concurrently, was smaller, but preserved the high standard of the larger conference.

A paper by Charles Eiserne, of Switzerland, on "Exhaust Turbo-Supercharging," was cited as being of particular note among the hundreds of papers read. Much of the conference was devoted to the discussion of labor problems, and the rationalization of manufacturing processes.

Thermoid Co. Opens Additional Plant Unit

TRENTON, N. J., Nov. 12—The Thermoid Company announces that its new $150,000 unit, adding additional space for the manufacture of asbestos brake linings, clutch rings and packings, has been placed in operation at its plant here.

The building contains 17,800 sq. ft. of floor space and has been built to house three complete production units. At present machinery sufficient for one production unit has been installed, but it will make sufficient additional Thermoid products to increase the company's annual sales approximately 10 per cent, according to executives.

Ryan Has New Plane

ST. LOUIS, Nov. 11—The Ryan Aircraft Corporation has announced that the Department of Commerce has issued an approved type certificate for a new model B-7 Ryan Brougham. The new plane while similar in basic design to the B-5 model, is powered with the Pratt & Whitney Wasp 420 hp. motor, which gives a high speed of 150 m.p.h. Several refinements in design and cabin appointments have been incorporated in the new six-place ship.

Air Accidents Laid to Pilots' Errors

WASHINGTON, Nov. 11—The predominant responsibility for air accidents rests on the pilot, to whom can be charged three-fourths of the fatal accidents, the Navy Department has determined after a survey of the last eight years in naval aviation. The analysis was said to be the most comprehensive ever undertaken, either here or abroad.

Conclusions from the study indicated, first, that manufacturers must continue to incorporate new elements of safety to further reduce the demands upon the necessarily fallible human element, and, second, that pilots must be selected from the very best material available, and must have the most careful and thorough training.

Gilpin Reports Decrease in Olympia Attendance

DETROIT, Nov. 11—H. P. Gilpin, export manager of Durant Motors, returned to Detroit last week after spending five weeks with Durant European distributors and dealers. Increased interest in American cars is seen everywhere, he reported.

"Although, as reported, the attendance at the auto shows was not equal to that of previous years," Mr. Gilpin said, "the people attending seemed to display an increased knowledge of cars and greater interest in salient mechanical features."

Lincoln Sales Gain

DETROIT, Nov. 12—Sales of the Lincoln automobile during the autumn season have continued to show substantial increase over sales for the same period last year, according to a statement by the Lincoln Motor Co. The volume of September sales was 33 per cent in excess of the volume for September, 1928, while October sales have been more than 24 per cent greater than those of October, 1928.

Mack Branch to Open Jan. 15

ST. LOUIS, Nov. 15—The new building of the Mack-International Motor Truck Corp., being constructed here at a cost of $400,000, will be ready for occupancy about Jan. 15, Clyde Erskine, factory branch manager, announced.

Attendance Disappointed

WASHINGTON, Nov. 11—Ending of the London (Olympia) Motor Show on Oct. 26 was characterized by some disappointment at the decreased attendance, according to the issue of *Commerce Reports* published today.

Studebaker Raises General Price List

Increases of From $10 to $100 Made on Forty-Seven Models

SOUTH BEND, Nov. 12—Forty-seven models of Studebaker automobiles in the President 8, Commander 8, Commander 6, Dictator 8, and Dictator 6 series have been raised in price from $10 to $100, as of Nov. 1, according to H. E. Jordan, assistant advertising manager of the Studebaker Corp. of America. Five new body styles have been added to the line.

A complete summary of changes in Studebaker prices follows:

Series	Capacity	Old Price	New Price
President Eight 135 in. W.B.			
Brougham (De Luxe)	5 Pass.	$2,195	$2,295
Brougham (De Luxe)	5 Pass.	2,195	2,295
Sedan State	7 Pass.	2,175	2,245
Sedan, State	7 Pass.	2,175	2,245
Limousine (De Luxe)	7 Pass.	2,350	2,495
Limousine (Standard)	7 Pass.	2,175	2,295
Tourer	7 Pass.	1,785	1,845
Tourer	7 Pass.	2,085	2,145
President Eight 125 in. W.B.			
Sedan	5 Pass.	1,735	1,765
Sedan, State (De Luxe)	5 Pass.	1,875	1,975
Sedan, State (De Luxe)	5 Pass.	1,875	1,975
Victoria State (De Luxe)	4 Pass.	1,875	1,975
Cabriolet (De Luxe)	4 Pass.	1,875	1,975
Roadster	4 Pass.	1,735	1,795
Commander Eight 120 in. W.B.			
Sedan	5 Pass.	1,475	1,515
Sedan	7 Pass.	1,635	1,695
Sedan, Regal (De Luxe)	5 Pass.	1,625	1,695
Sedan, Regal (De Luxe)	7 Pass.	(New)	1,845
Victoria	4 Pass.	1,475	1,515
Cabriolet, Convertible (De Luxe)	4 Pass.	1,595	1,695
Coupe	2 Pass.	1,445	1,495
Coupe	4 Pass.	1,495	1,545
Brougham (De Luxe)	5 Pass.	1,650	1,695
Brougham (De Luxe)	5 Pass.	1,650	1,695
Roadster, Regal	4 Pass.	1,495	1,595
Tourer	5 Pass.	1,445	1,495
Tourer, Regal (De Luxe)	5 Pass.	1,545	1,595
Commander Six 120 in. W.B.			
Sedan	5 Pass.	1,325	1,425
Sedan, Regal	5 Pass.	1,445	1,545
Victoria	4 Pass.	1,325	1,425
Cabriolet, Convertible (De Luxe)	4 Pass.	1,445	1,545
Coupe	2 Pass.	1,245	1,345
Coupe	4 Pass.	1,325	1,425
Brougham (De Luxe)	5 Pass.	1,475	1,575
Brougham (De Luxe)	5 Pass.	1,475	1,575
Roadster, Regal	4 Pass.	1,395	1,495
Dictator Eight 115 in. W.B.			
Sedan	5 Pass.	1,235	1,285
Sedan, Club	5 Pass.	1,185	1,195
Sedan, Regal	5 Pass.	1,335	1,395
Brougham (De Luxe)	5 Pass.	(New)	1,395
Coupe	2 Pass.	1,185	1,235
Coupe	4 Pass.	1,235	1,285
Tourer	5 Pass.	1,235	1,285
Tourer, Regal	5 Pass.	(New)	1,385
Dictator Six 115 in. W.B.			
Sedan	5 Pass.	1,095	1,165
Sedan, Club	5 Pass.	1,035	1,085
Sedan, Regal	5 Pass.	1,195	1,265
Brougham (De Luxe)	5 Pass.	(New)	1,295
Coupe	2 Pass.	995	1,045
Coupe	4 Pass.	1,045	1,095
Tourer	5 Pass.	1,095	1,145
Tourer, Regal	5 Pass.	(New)	1,265

Steel Prices Drop as Demand Slumps

Capacity of Finishing Mills is Double Volume of Orders

NEW YORK, Nov. 14—Steel prices are beginning to reflect the paucity of demand. Capacity of finishing mills is just about twice that needed to take care of current orders, and this factor is making itself more and more felt in the market.

Cold-finished steel bars, which find their principal application in the automotive industries, have slipped $2 a ton to 2.20 cents, Pittsburgh. This decline has not resulted from any dip in the price of the cold finishers' raw material: hot-rolled bars, but solely from the pressure of unemployed cold-finishing capacity. On the relatively few contracts for the current quarter, finishers have readjusted the price as of Nov. 1.

The decline in cold-finished bars has made for a weaker undertone in the market for hot-rolled bars, finishers naturally wanting to obtain their supplies of the latter at concessions.

While the market for full-finished automobile sheets is still quotable at 4 cents, Pittsburgh, all thought of reinstating the 4.10 cents price before the placing of 1930 business has disappeared, and producers will be satisfied if they can carry the 4 cent price level into 1930.

The market for black and blue annealed sheets is subject to a good deal of shading. The market as a whole has become an out-and-out buyers' affair, with buyers, however, too few to subject prices to real tests.

The market for automotive alloy steels is dormant. Ford and Chevrolet buying is of a routine character. It was so well understood in the steel market that the leading interest's unfilled tonnage statement of October 31 would show an increase because of heavy bookings of orders for rails last month that the increase of 183,981 tons failed to make very much of an impression.

Pig Iron—Automotive demand is light, but Middle West buying by other consuming industries continues fair. Prices continue nominally unchanged.

Aluminum—A slightly improved tone is discernible. One of the constructive factors is that inventories have never been so light, and while automotive consumers are expected to be cautious in their commitments, they are looked for to come into the market as soon as their production schedules for 1930 begin to take form. Prices are unchanged.

Copper—Considerable metal is accumulating at custom smelting plants and producers are reported to be taking steps to prevent this copper from weakening the market which continues at 18c delivered Connecticut, and 18⅛c delivered Middle West. In the "outside" market electrolytic, delivered Connecticut, is quoted at 17¾c for spot and at 17½@17¾c for December-January shipment.

Franklin to Retain All Old Employees

SYRACUSE, N. Y., Nov. 11—H. H. Franklin, president of the Franklin Automobile Co., has announced that not one of the 2300 employees in his plant need fear the uncertainties of employment at old age.

Supplementing the pension plan which has been operative in the Franklin plant for the past eight years, those workers who are not of pensionable age but who have reached a point of diminished productivity, will, in the future, be transferred to newly created divisions where the object will be to fit the job to the man. Their wages need not necessarily decrease with the transfer, since their pay envelope will depend on their own individual efforts through the piece-work plan.

LaFrance-Republic Has New One-Ton Truck

ALMA, MICH., Nov. 11—The La-France-Republic Corp. has entered the one-ton truck field with 6000 lb. straight rating truck listing at $990, according to an announcement by Vice-president F. L. Pierce. This new truck, which is an addition to the Republic line, has been designated as Model A-1. Deliveries will start from the Alma factory approximately Nov. 20.

Outstanding features of Republic Model A-1 are as follows: a 58 hp. six-cylinder, truck-type engine; four-speed, heavy duty transmission; four-wheel hydraulic brakes, internal expanding; six-inch frame; bevel gear rear axle; 132-in. wheelbase, and balloon front tires.

N.S.P.A. Adds Members

DETROIT, Nov. 14—Twenty-four new names were added to the roster of the National Standard Parts Association at a meeting of the executive committee, held recently at Detroit headquarters. This gives the association a total of 440 members divided as follows: Jobbers 234 and manufacturers, 204. The manufacturing members just added are: Adams Grease Gun Corp., New York; Arco Co., Cleveland; Bates Wohlert Co., Lansing, Mich.; Berger Mfg. Co., Canton, Ohio; Duro Metal Products Co., Chicago, Ill.; Rogers Products Co., Inc., Jersey City, N. J.; John T. Stanley Co., Inc., New York; Trimont Mfg. Co., Roxbury, Mass.

Timing Gears Held Taxable

WASHINGTON, Nov. 12—Timing gears sold to jobbers for replacement purposes and used in automobiles are subject to the manufacturers' excise tax, the Court of Claims has held.

The fact that such gears could be used on other engines is immaterial, the court held, pointing out that the engine used in certain makes of automobiles can be used for other machinery.

Business in Brief

Written by the Guaranty Trust Co., New York, exclusively for Automotive Industries.

NEW YORK, Nov. 14—Wholesale and jobbing trade last week was smaller than that a year ago, but the volume of retail buying was larger. Industrial activity in general was above that a year ago. Despite the recent crash in the stock market, failures of financial houses have been practically absent.

CHAIN STORE SALES

Sales of 38 leading store chains in October amounted to $211,268,967 showing an increase of $29,667,798 or 16.33 per cent, over those in the corresponding period last year.

COMMERCIAL FAILURES

Commercial failures during October, according to R. G. Dun & Co., numbered 1822, with liabilities of $31,313,581 as compared with 2023 insolvencies, with liabilities of $34,990,474, a year ago.

CRUDE OIL PRODUCTION

Average daily crude oil production for the week ended Nov. 2 amounted to 2,819,450 bbl., as against 2,869,700 bbl. for the preceding week and 2,497,150 bbl. a year ago.

FREIGHT CAR LOADINGS

Railway freight loadings for the week ended Oct. 26 totaled 1,133,810 cars, which marks a decline of 29,164 cars below those a year ago but an increase of 20,994 cars above those two years ago.

FISHER'S INDEX

Prof. Fisher's index of wholesale commodity prices for the week ended Nov. 9 stood at 93.3, a new low for the current year, as against 93.7 the week before and 94.1 two weeks before.

BANK DEBITS

Bank debits to individual accounts outside of New York City for the week ended Nov. 6 were 32 per cent above those in the corresponding week last year.

STOCK MARKET

The stock market last week since Tuesday closed at 1 p. m.; and, although the volume of trading was therefore well below that in the preceding week, the number of transactions was large. Trading last week was marked by further liquidation, and prices at the end of the week were substantially lower. The call money rate was 6 per cent.

FEDERAL RESERVE STATEMENT

The consolidated statement of the Federal Reserve banks for the week ended Nov. 6 showed little change in holdings of discounted bills and in holdings of government securities. There were decreases of $9,500,000 in holdings of bills bought in the open market and of $93,900,000 in member bank reserve deposits. The reserve ratio on Nov. 6 was 69.8 per cent, as against 69.4 per cent a week earlier.

Factory Additions Down, Garages Gain

Auto-Lite Plans Biggest in Week's Report of New Construction

PHILADELPHIA, Nov. 14—As automotive plant addition projects showed a decline this week, the number of storage, service and repair garages showed a sharp increase, bringing the total contemplated construction for the first half of November to a satisfactory level.

Original plant projects for automobile manufacturers and parts makers have shown a sharp decline, although one concern plans expenditures of $4,000,000. Tool builders report considerable business pending because of contemplated plant changes.

Among the larger projects reported this week were:

Prest-O-Lite Co., New York, has plans for a new branch plant at Casper, Wyo., to cost more than $75,000 with equipment. It is scheduled for completion early next year.

I. Kallich, Brooklyn, achitect, has plans for a four-story automobile service, repair and garage building, to cost about $140,000 with equipment.

Chevrolet Motor Co., Boulevard, Detroit, is contemplating early call for bids for one-story addition to assembling plant at Tarrytown, N. Y., to cost about $200,000 with equipment. Albert Kahn, Inc., Detroit, is architect.

Irving Air Chute Co., Buffalo, has authorized immediate construction of new branch plant at Grand Central Air Terminal, Glendale, near Los Angeles, consisting of one-story unit for parts production and assembling, to cost about $100,000 including equipment.

Parkway Motor Co., Inc., Washington, has plans for three-story service, repair and sales building, including body shop, on site recently acquired, to cost over $125,000 including equipment.

Herman Body Co., St. Louis, has awarded general contract to Murch, for one-story plant, 130 x 160 ft., to cost about $40,000 with equipment.

North American Air Lines, Inc., Tulsa, Okla., has secured 100-acre tract at Sapulpa, Okla., and plans airport with hangars, repair shop and other mechanical units, to cost more than $90,000 with equipment.

Gears & Forgings, Inc., Chicago, has acquired a plant for expansion, and will concentrate all local production at new location.

Burkett Closed Body Co., Dayton, Ohio, has filed plans for extensions and improvements in three-story factory, to cost about $25,000.

McCord Radiator & Mfg. Co., Detroit, has plans under way for a one-story top addition to present three-story plant, to cost about $50,000 with equipment.

Fitzjohn Mfg. Co., Muskegon, Mich., manufacturer of commercial automobile bodies, is planning a one-story addition, totaling 20,000 sq. ft. floor space, to cost about $55,000 with equipment.

Detroit Transfer Co., Detroit, has plans for a two-story automobile service, repair and garage building, for motor trucks and passenger cars, to cost about $120,000 with equipment.

Royal Airways Corp., Madison, Wis., is building a hangar, 100 x 135 ft., including machine and service shop.

Wisconsin Cylinder Co., Racine, Wis., is erecting two shop additions, 40 x 70 ft. and 28 x 60 ft.

Electric Auto-Lite Co., Toledo, Ohio, has plans for an addition, to cost $1,000,000 with equipment. Company also has plans for new branch plant at Sarnia, Ont., to cost about $3,000,000 with machinery.

Sinclair Auto Service Corp., Chicago, has plans for a one-story mechanical and repair shop at Cleveland, to cost about $85,000 with equipment.

Tuscan Tire & Rubber Co., Carrollton, Ohio, is considering early rebuilding of plant destroyed by fire Oct. 29.

Cleveland Heights Air Terminals, Inc., Cleveland, has plans for airport comprising hangars, repair and reconditioning facilities, oil storage and other mechanical units, to cost more than $125,000 with equipment.

Alcohol Used for Fuel in Philippine Cars

WASHINGTON, Nov. 11 — Within the last few years the manufacture of motor alcohol in the Philippines has steadily increased, according to the Chemical Division, Department of Commerce. According to unofficial estimates, an annual output of motor alcohol valued at $5,000,000 is realized from cane molasses, a by-product of the sugar industry.

Motor alcohol retails at less than half the price of gasoline in the Philippines, and in 1928 production amounted to 13,500,000 liters, of which nearly 4,000,000 were exported to China, the chief market. It is stated that at present about 50 per cent of the available molasses is distilled into alcohol.

William M. Sternberg

MILWAUKEE, Nov. 11—William G. Sternberg, Sr., one of the pioneers of the motor truck industry of America, and the founder of the present Sterling Motor Truck Co., Milwaukee, died at his home here Nov. 9 at the age of 82 years. Mr. Sternberg, a noted inventor and designer of mechanical appliances, was born in Germany and came to America in 1865, settling at Davenport, Iowa, where he opened a small machine shop to manufacture agricultural implements. Forty years ago he devised a small locomotive for carrying farm crops, this being the first attempt to transport farm produce by mechanical means.

In 1907 Mr. Sternberg moved to Milwaukee, and with his sons, Ernest and William Sternberg, and Rogert G. Hayssen, established the Sternberg Mfg. Co. to build motor trucks. In 1914 the name was changed to Sterling. Mr. Sternberg retired from active business several years ago. His son, Ernest, is a vice-president of the company.

Plan Metalclad Airship

DETROIT, Nov. 11 — The Detroit Aircraft Corp., as its next step in lighter-than-air development, is now designing for commercial uses a 500-ft., 100-ton Metalclad airship which will have a speed of 100 miles per hour, according to Edward S. Evans, president.

Canadian Exports Show Slight Drop

September Figures Indicate Decrease of Two Per Cent

WASHINGTON, Nov. 11 — Exports of passenger cars and trucks from Canada during September, 1929, reached a value of $3,257,037, but registered a decrease of about 2 per cent as compared with exports during August, which amounted to $3,326,799, according to the Department of Commerce. The entire decrease in value, however, occurred in the motor truck classification, the value of passenger cars increasing slightly. As compared with a total of $3,261,525 in July the September figure shows a very small decrease.

The percentage of decrease in units, however, was much larger than that covering value. The number of units of cars and trucks exported during September was decreased nearly 13 per cent.

Shipments of passenger car units declined 12.4 per cent as compared with a decrease of slightly more than 2 per cent in value, thus accounting for the increase in average unit value from $453 in August to $506 in September. Exports of low-price cars, valued up to $500, decreased 24 per cent in number and about the same in value; those covering medium-price cars, $500 to $1,000, remained about the same while a comparatively tremendous increase was recorded in high-price cars.

Shipments of light trucks (1 ton or less) decreased 10 per cent while trucks with capacity over 1 ton decreased 20 per cent.

Production recorded a decrease of only 2.8 per cent as compared with the August figure, but about 35 per cent below production in September, 1928.

Heinrich Bussing

BERLIN, Oct. 28 *(Special)*—On Oct. 27, Heinrich Bussing, the founder of the Bussing works, well known as producers of trucks and buses, died at the age of 86, at Braunschweig, the seat of his factory and home. In the person of Bussing another of the old and one of the most successful pioneers of the German automotive industry has passed away.

He established his factory in 1902, and the high quality of the vehicles there produced soon made the name of Bussing well known. He was the recipient of many honors and was appointed privy councilor in recognition of his services to the German industry and also received an honorary degree from one of the German universities. In his works the first standardized production of heavy six-wheelers was inaugurated in 1924 and this line of vehicles has been especially successful. A very large number of them have been exported. In Germany 98 per cent of all six-wheelers are Bussing made.

Cars and Trucks Shown at Bottlers' Convention

ATLANTIC CITY, Nov. 11—Eight motor vehicle makers and two body manufacturers exhibited at the opening of the eleventh annual convention of the American Bottlers of Carbonated Beverages, in the Atlantic City Auditorium today. Trucks were shown by the White Motor Co., Chevrolet, Mack, Dodge, Federal, Brockway, Indiana and International Harvester.

Special bodies for hauling beverages were displayed by Weldmech Steel Products Co. and the Wood Hydraulic Hoist Co. The former exhibited a 12-case body for motorcycle side car as well as larger bodies for trucks. Graham-Paige displayed two passenger cars.

Fuel Specifications Changed

WASHINGTON, Nov. 11—The specifications on which the United States Government purchases its motor fuel have been revised recently, according to an announcement by the Department of Commerce. Tests conducted in outlining the new specifications were planned with the object of securing good starting, acceleration, road performance, and to protect the purchaser from crankcase dilution, corrosion of parts, sticking of valves and vapor-lock.

Dornier Works Not to Close

BERLIN, Oct. 28 *(Special)*—In a part of the press the statement was circulated recently that the Dornier works of Friedrichshafen, the builders of the well-known Dornier flying ships and of the giant ship Do-X, were intending to close down and that 60 per cent of the staff had been given notice. This report is wholly untrue, according to officials of the company. On the contrary, it is believed that shortly they will have to engage further workers. The company has sold the Do-X to the Deutsche Lufthansa, and has received an order for two further ones from Italy, it was announced.

Mexican Tax on Gas Gives Record Return

MONTEREY, MEX., Nov. 12—As a result of the increase of automobile travel in Mexico, especially in the districts where modern highways have been constructed, the Mexican government received a larger revenue from gas taxes on gasoline production and importation during the first eight months of this year than in any previous corresponding period, according to a statement just issued by the Special Taxation Bureau of the Department of the Treasury. According to this data, the taxes on gasoline production and importation from January to August totaled 6,764,471.08 pesos, equivalent to approximately $3,382,235.54.

Detroit Bridge Dedicated

DETROIT, Nov. 11—The Ambassador Bridge, a $22,500,000 project spanning the Detroit River between Detroit and Sandwich, Ont., was dedicated today with the participation of Vice-president Curtis in the ceremonies. The bridge will be opened to traffic Nov. 15. It is estimated to have a capacity of 5000 cars per hour.

Ford Plane Sold in Europe

DETROIT, Nov. 11—Sale of the first all-metal Ford air transport to a European government has been announced by the Ford Motor Company. The monoplane was purchased by Czecho-Slovakia, where it was demonstrated by LeRoy Manning, chief test pilot of the Ford Motor Company.

N. Y. Police Dept. Bars Used Cars for Taxicabs

NEW YORK, Nov. 11—The Automobile Merchants Association of New York, Inc., has filed a petition with the police commissioner against his ruling that no new taxicabs would be licensed which were converted from second hand passenger cars. The Merchants Association contended that this ruling would cut their used car sales 20 per cent.

In his reply the commissioner stated that New Yorkers spend on the average about $400,000 for taxicab service and are entitled to the safety of perfectly equipped cars.

For this reason, he said, a new set of standard specifications covering taxicabs will be drawn up by the New York police department, and these will be guaranteed against major changes for a period of five years.

Budd Door Output Gains

PHILADELPHIA, Nov. 11—The door plant of the Edward G. Budd Mfg. Co. of Philadelphia and Detroit produced 1,809,532 automobile doors during the first ten months of this year, according to an official announcement. This compares with a production of 1,108,116 doors during the corresponding period last year. The October production totaled 155,800 doors as against 94,490 for October, 1928.

Manganese Duty Restored

WASHINGTON, Nov. 11—Tariff duties of 1 cent a lb. on the metallic manganese content of imports of manganese ores and concentrates were restored by the Senate Nov. 7 after a five-hour debate, during which the net profits of eight steel companies over a period of eight years, under the Fordney-McCumber tariff were disclosed. The vote on the proposal was 60 to 18.

Calendar of Coming Events

SHOWS

New York Automobile Salon .....Dec. 1-7
National Power Show, Grand Central Palace, New York .....Dec. 2-7
Philadelphia, Automobile .....Jan. 11-18
Buffalo, Automobile .....Jan. 11-18
Milwaukee Automobile Show ....Jan. 11-18
Cincinnati, Automobile .....Jan. 12-18
Boston, Automobile .....Jan. 18-25
Detroit, Automobile .....Jan. 18-25
Baltimore, Automobile .....Jan. 18-25
Harrisburg, Automobile .....Jan. 18-25
Louisville, Automobile .....Jan. 18-25
Hartford, Automobile .....Jan. 18-25
Pittsburgh, Pa., Automobile .....Jan. 18-25
Rochester, Automobile .....Jan. 20-25
Columbus, Automobile .....Jan. 26-Feb. 1
Wilkes-Barre, Automobile ...Jan. 27-Feb. 1
San Francisco, Cal., Automobile...Feb. 1-8
Toledo, Ohio, Automobile .....Feb. 3-8
Wichita, Automobile .....Feb. 3-8
Cumberland, Automobile .....Feb. 3-8
Syracuse, Automobile .....Feb. 3-8
Ottawa, Automobile .....Feb. 3-8
Peoria, Automobile .....Feb. 4-8
St. Louis, Automobile .....Feb. 4-9
New York, American Legion, Aviation .....Feb. 9-15
Denver, Automobile .....Feb. 10-15
Sheboygan, Automobile .....Feb. 10-16
Mankato, Automobile .....Feb. 12-15
Providence, Automobile .....Feb. 14-22
Camden, N. J., Automobile..Feb. 24-Mar. 1
Des Moines, Automobile ....Feb. 24-Mar. 1
Seattle, Wash., Automobile..Feb. 25-Mar. 2
Detroit (All-American Aircraft)..April 5-13
Paris, Trucks .....Nov. 14-24
London, Motorcycles .....Nov. 30-Dec. 7
Brussels Auto Salon .....Dec. 7
New York National.....Jan. 4-11
Newark (N. J.) Automobile Show.Jan. 11-18
Boston Automobile Show.....Jan. 13-25
Chicago National, Coliseum..Jan. 25-Feb. 1
Cleveland Automobile Show..Jan. 25-Feb. 1

CONVENTIONS

Asbestos Brake Lining Assn., New York .....Dec. 11
Ohio Assn. of Commercial Haulers, Cleveland .....Jan. 30-31
World Engineering Congress, Tokio, Japan .....Oct. 29-Nov. 22
National Automotive Parts Association, Detroit .....Nov. 6-8
National Asso. Finance Companies, Chicago .....Nov. 19-20
American Society Mechanical Engineers, New York .....Dec. 2-6
Highway Research Board, Ninth Annual Meeting, Washington, D. C. Dec. 12-13
National Automobile Dealers Association, New York City .....Jan. 6
American Roadbuilders Association, Atlantic City .....Jan. 11-18
American Institute Electrical Engineers, New York .....Jan. 27-31
National Automotive Dealers Association, Chicago .....Jan. 27-28
Southwest Road Show and School, Wichita .....Feb. 25-28
American Society Mechanical Engineers, Fiftieth Anniversary Celebration:
New York .....April 5
Hoboken, N. J. .....April 7
Washington, D. C. .....April 8-9

RACES

Los Angeles .....Nov. 17

S. A. E.

Annual Meeting, Detroit.....Jan. 21-24

SALONS

Hotel Commodore, New York City..Dec. 1-7
Hotel Biltmore, Los Angeles.....Feb. 8-15
Palace Hotel, San Francisco, Feb. 22-Mar. 1